Attachments to the VA0062189 Fact Sheet

Attachment 1	Flow Frequency Determination
Attachment 2	Facility Schematic
Attachment 3	Topographic Map
Attachment 4	Site Inspection
Attachment 5	Planning Statement
Attachment 6	Water Quality Criteria and Wasteload Allocation Determinations
Attachment 7	Effluent Data
Attachment 8	Limit Evaluations
Attachment 9	Dissolved Oxygen Model
Attachment 10	Groundwater Data
Attachment 11	Public Notice

Attachment 1

MEMORANDUM

DEPARTMENT OF ENVIRONMENTAL QUALITY - WATER DIVISION
Water Quality Assessments and Planning
629 E. Main Street P.O. Box 10009 Richmond, Virginia 23240

SUBJECT: Flow Frequency Determination
St. Louis STP - #VA0062189

TO: Golnaz Walker, NRO

FROM: Paul E. Herman, P.E., WQAP

DATE: December 14, 2000

COPIES: Ron Gregory, Charles Martin, File

This memo supersedes my April 9, 1996, memo to James Engbert concerning the subject VPDES permit.

The St. Louis STP discharges to an unnamed tributary of Beaverdam Creek near St. Louis, VA. Stream flow frequencies are required at this site by the permit writer for the purpose of calculating effluent limitations for the VPDES permit.

At the discharge point, the receiving is depicted as intermittent on the USGS Bluemont Quadrangle topographic map. The flow frequencies for intermittent streams are 0.0 cfs for the 1Q10, 7Q10, 30Q5, high flow 1Q10, high flow 7Q10, and harmonic mean. Flow frequencies have been determined for the first perennial reach downstream of the discharge point.

The USGS conducted several flow measurements on the Goose Creek during the 1960's. The measurements were made at the U.S. Highway 15 bridge near Oatlands, VA. The measurements made by the USGS correlated very well with the same day daily mean values from the continuous record gage on the Catoctin Creek at Taylorstown, VA #01638480. The measurements and daily mean values were plotted on a logarithmic graph and a best fit line was drawn through the data points. The required flow frequencies from the reference gage were plugged into the equation for the regression line and the associated flow frequencies at the measurement site were calculated.

The flow frequencies at the discharge point were determined by using the values at the measurement site and adjusting them by proportional drainage areas. The data for the reference gage, the measurement site and the discharge point are presented below:

Catoctin Creek at Taylorstown, VA (#01638480):

Drainage Area = 89.6 mi^2

1Q10 = 0.81 cfs	High Flow 1Q10 = 6.42 cfs
7Q10 = 1.02 cfs	High Flow 7Q10 = 8.59 cfs
30Q5 = 3.39 cfs	HM = 10.9 cfs

Annual Average = 102 cfs

Goose Creek at Oatlands, VA (#01643950):

Drainage Area = 276 mi^2

1Q10 = 3.37 cfs	High Flow 1Q10 = 21.2 cfs
7Q10 = 4.14 cfs	High Flow 7Q10 = 27.5 cfs
30Q5 = 12.0 cfs	HM = 34.0 cfs

Annual Average = 247 cfs

Attachment 1

Unnamed Tributary at beginning of perennial reach:

Drainage Area = 0.59 mi^2

1Q10 = 0.007 cfs (0.005 mgd)	High Flow 1Q10 = 0.045 cfs (0.029 mgd)
7Q10 = 0.009 cfs (0.006 mgd)	High Flow 7Q10 = 0.059 cfs (0.038 mgd)
30Q5 = 0.026 cfs (0.017 mgd)	HM = 0.073 cfs (0.047 mgd)

Annual Average = 0.528 cfs (0.341 mgd)

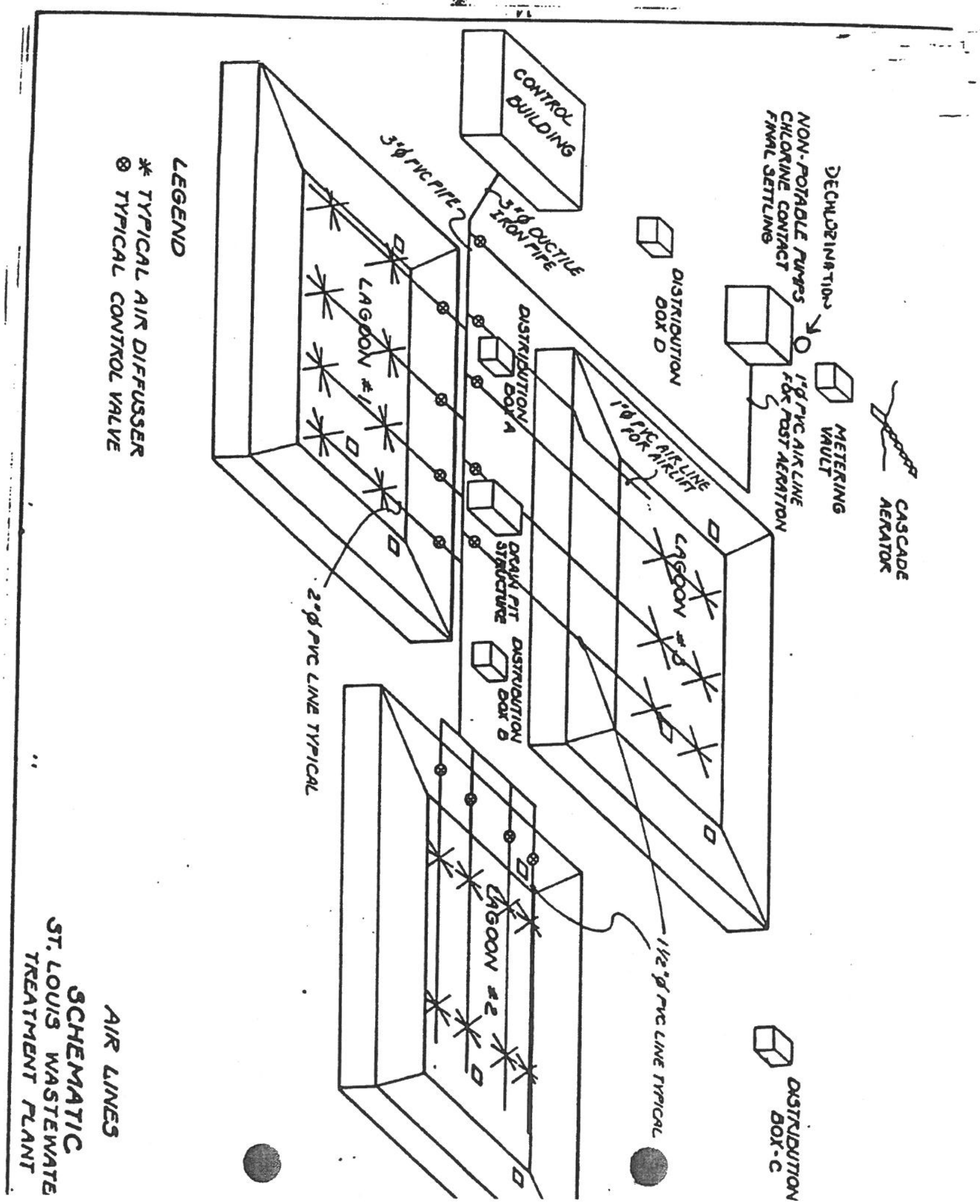
The high flow months are December through May. This analysis assumes there are no significant discharges, withdrawals or springs influencing the flow in the unnamed tributary upstream of the discharge point.

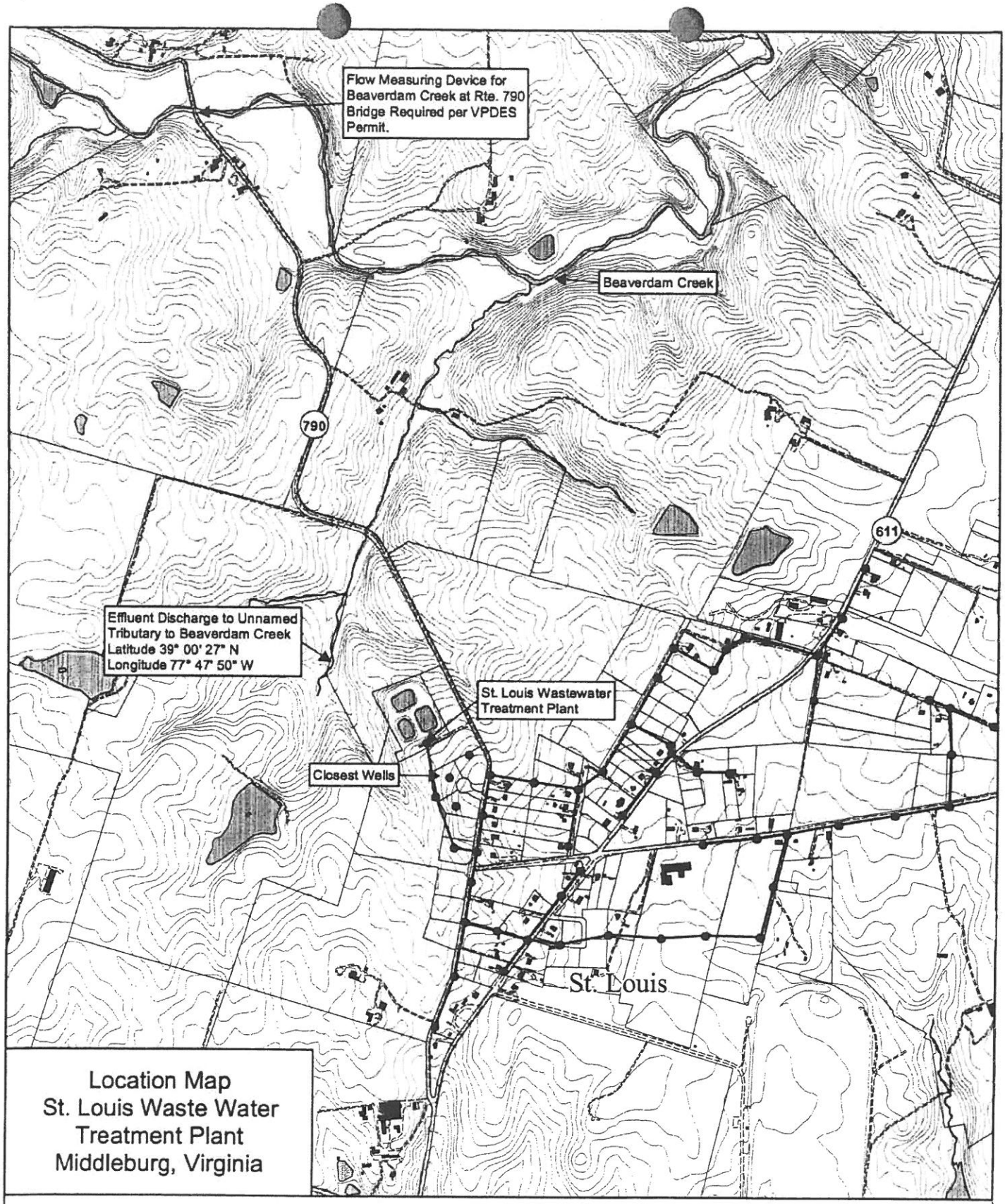
If there are any questions concerning this analysis, please let me know.

Attachment 2

Attachment 2

Figure 1 - Facility Diagram
Source - 1981 Operations and Maintenance Manual





Location Map
St. Louis Waste Water Treatment Plant
Middleburg, Virginia

N
W E
S

SCALE: 1:10,800

0.5 0.25 0 0.5 Miles

1,000 500 0 1,000 2,000 Feet

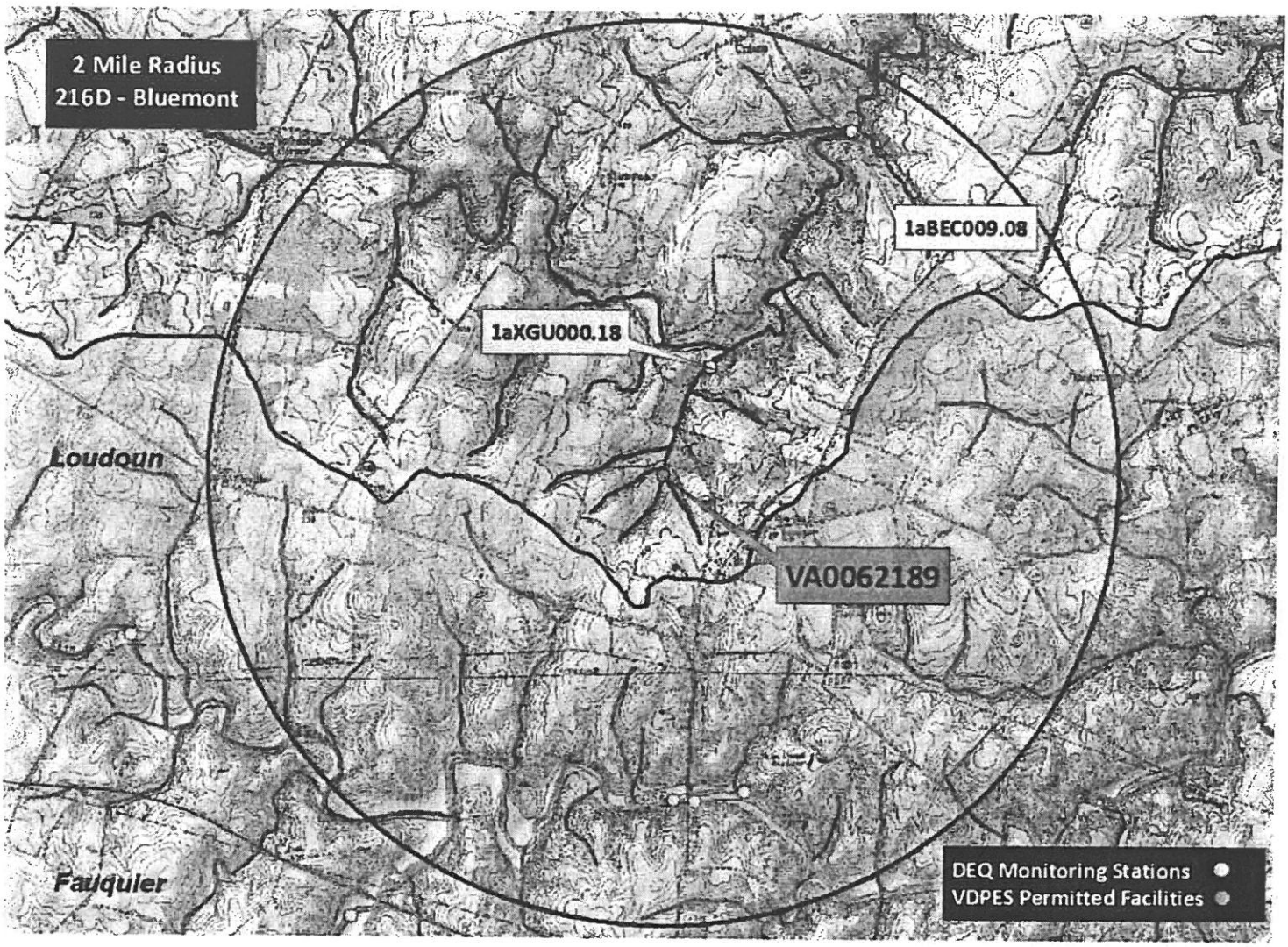
0.5 0.25 0 0.5 Kilometers

Created February 7, 2005

LCSA
LOUDOUN COUNTY SANITATION AUTHORITY

Attachment 3

Attachment 3



Attachment 3

Attachment 4

COMMONWEALTH of VIRGINIA

DEPARTMENT OF ENVIRONMENTAL QUALITY
NORTHERN REGIONAL OFFICE
13901 Crown Court, Woodbridge, Virginia 22193
(703) 583-3800 Fax (703) 583-3821
www.deq.virginia.gov

Douglas W. Domenech
Secretary of Natural Resources

David K. Paylor
Director

Thomas A. Faha
Regional Director

August 20, 2013

Frank Stokes
Community Systems Manager
Loudoun Water
P.O. Box 4000s
Ashburn, VA20146

Re: **St. Louis Wastewater Treatment Plant, Permit #VA0062189**

Dear Mr. Stokes:

Attached is a copy of the Inspection Report generated from the Facility Technical Inspection conducted at St. Louis – Wastewater Treatment Plant (WWTP) on July 24, 2013. This letter is not intended as a case decision under the Virginia Administrative Process Act, Va. Code § 2.2-4000 *et seq.* (APA). Additional inspections may be conducted to confirm that the facility is in compliance with permit requirements.

Please review the enclosed report and submit in writing adequate documentation of all measures taken (including all necessary supporting documentation) to address the Request for Corrective Action no later than **September 21, 2013**.

Your response may be sent either via the US Postal Service or electronically, via E-mail. If you choose to send your response electronically, we recommend sending it as an Acrobat PDF or in a Word-compatible, write-protected format. Additional inspections may be conducted to confirm that the facility is in compliance with permit requirements.

If you have any questions or comments concerning this report, please feel free to contact me at the Northern Regional Office at (703) 583-3882 or by e-mail at Sharon.Allen@deq.virginia.gov.

Sincerely,

Sharon Allen

Sharon Allen
Environmental Specialist II

cc: Permits / DMR File

Electronic copy sent:
Compliance Manager, Compliance Auditor – DEQ
Les Morefield - Loudoun Water Community Systems Supervisor

DEQ
WASTEWATER FACILITY INSPECTION REPORT
PREFACE

VPDES/State Certification No.	(RE) Issuance Date	Amendment Date	Expiration Date
VA0062189	**August 31, 2011**		**August 30, 2016**

Facility Name	Address	Telephone Number
St. Louis Community WWTP	**151 Newlin Mill Rd. St Louis, VA 20117**	**571-291-7700**
Owner Name	Address	Telephone Number
Loudoun Water	**P.O. Box 4000 Ashburn, VA 20146**	**571-291-7700**
Responsible Official	Title	Telephone Number
Les Morefield	**Community Systems Supervisor**	**571 291-7878**
Responsible Operator	Operator Cert. Class/number	Telephone Number
R. Allen Clemens	**Class III;1965007574**	********

TYPE OF FACILITY:

DOMESTIC				**INDUSTRIAL**			
Federal		Major		Major		Primary	
Non-federal	**X**	Minor	**X**	Minor		Secondary	

INFLUENT CHARACTERISTICS:	DESIGN:
Flow MGD	**0.086**
Population Served	**~235**
Connections Served	**84**
BOD_5 (Feb 2013)	**253**
TSS (Feb 2013)	**217**

EFFLUENT LIMITS: **mg/L unless noted**

Parameter	Min.	Avg.	Max.	Parameter	Min.	Avg.	Max.
pH, s.u.	**6.0**		**9.0**	**DO**	**6.8**		
BOD_5		**20**	**30**	**TSS**		**30**	**45**
E. coli, n/cml (geometric mean)		**126**		**Ammonia-N**		**5.7**	**8.4**
TRC (Inst tech min)	**0.6**			**TRC (post dechlorination)**		**0.009**	**0.011**
TRC (Total Contact)	**1.0**						

Receiving Stream	**Beaverdam Creek, UT**
Basin	**Potomac River**
Discharge Point (LONG)	**77° 47′ 50″**
Discharge Point (LAT)	**39° 00′ 27″**

Problems identified at last inspection: April 10, 2006	Corrected	Not Corrected
1. **None Noted**	[ ]	[ ]

SUMMARY - July 2013

Comments:

- **This permit requires influent monitoring once a year for TSS and BOD5, with a removal rate of at least 85% for this effluent.**
- **The influent monitoring samples were last collected February 6, 2013**
  - **BOD5 influent = 253**
  - **BOD5 effluent = 3.78**
  - **98.5 % removal**

  - **TSS influent = 328**
  - **TSS effluent = 2.17**
  - **99.3 % removal.**

  Please note that the effluent samples were 4 hour composites; the influent samples were grab as per permit requirements.

- **The pump station on the east side of Rt. 606 has been out of service for ~2 years. According to operators, this pump station serves 3 or houses; sewage is pumped and hauled to the manhole at the top of the hill at the WWTP once per week. I spoke to Mr. Morefield on August 13, 2013, who confirmed that the pumps and piping are in stock. The control panel is being rebuilt, and once completed all components will be installed. The project is expected to be completed by the end of October 2013.**

- **The plant and grounds appeared to be in good condition. The wooden walkways in each lagoon have been removed, as well as the wooden steps from the control building down to the lagoons. Vac trucks have access to distribution box D and the clarifiers. The staff is working on clearing vines and brush off of the perimeter fence. No signs of burrows around the lagoons.**

- **All three ponds and the clarifiers were covered in duckweed. Duckweed did not appear to be passing over the clarifier weirs on the day of this inspection.**

REQUEST for CORRECTIVE ACTION:

- **Operators need to complete IDC for pH using the WTW multimeter and for TRC.**
- **The town pump station has been out of service since at least June 1, 2011. Notify DEQ once the pump station is back in operation.**
- **The over-hanging branches at Outfall 001 and around the monitoring wells should be trimmed to continue to allow unimpeded access. Notify DEQ once tree work is done.**
- **The O&M manual must be updated to include the addition of the staff gage in distribution box D and to reflect use of one pump rather than two at Distribution Box D.**
- **The backup generator is not operational. While a backup generator is not currently required under the reliability class for this WWTP, the generator on site should be maintained in working order.**
- **The telephone landline to the control building is not currently working. While operators have cell phone with them, cell service can be spotty. DEQ recommends that the land line be returned to service and available in case of emergency,**

Please Note:

The convention for identifying laboratory methods used for compliance purposes has changed under the 40 CFR Part 136 Method Rules Update in published in May 2012. Analytical methods in Standard Methods must now be identified by the method's approved date, rather than by an edition number.

Example: Rather than referencing pH as SM 18th edition, 4500-H+ B, the proper reference for the current approved method is SM 4500 - H^+B-2000. Please note that pH methods published in Standard Methods earlier than 2000 (SM 21st edition) will no longer be acceptable for compliance purposes.

The Virginia Division of Consolidated Laboratory Services Environmental Laboratory Certification Program Technical Assistance Document published April 2013 states "All laboratory documentation and reported data must be MUR-compliance by February 1, 2014." This requirement is being applied to field analyses as well as to laboratory analyses.

Virginia Department of Environmental Quality

FOCUSED CEI TECH/LAB INSPECTION REPORT

FACILITY NAME: St. Louis Community WWTP		**INSPECTION DATE:**	**July 24, 2013**
		INSPECTOR	**S. Allen**
PERMIT No.:	**VA0062189**	**REPORT DATE:**	**July 16, 2013**
TYPE OF FACILITY: ☑ Municipal ☐ Major ☐ Industrial ☑ Minor ☐ Federal ☐ Small Minor ☐ HP ☐ LP		**TIME OF INSPECTION:**	Arrival **1100** / Departure **1310**
		TOTAL TIME SPENT (including prep & travel)	**20 hours**
PHOTOGRAPHS: ☑ Yes ☐ No		**UNANNOUNCED INSPECTION?**	☐ Yes ☑ No
REVIEWED BY / Date: Edward L. Stat 8/19/13			
PRESENT DURING INSPECTION:	**Charlie Triplet, Allan Clemens – Loudoun Water**		

TECHNICAL INSPECTION

1. Has there been any new construction? • If so, were plans and specifications approved? Comments:	☐ Yes ☑ No
2. Is the Operations and Maintenance Manual approved and up-to-date? Comments:	☑ Yes ☐ No
3. Are the Permit and/or Operation and Maintenance Manual specified licensed operator requirements being met? Comments:	☑ Yes ☐ No
4. Are the Permit and/or Operation and Maintenance Manual specified operator staffing requirements being met? Comments:	☑ Yes ☐ No
5. Is there an established and adequate program for training personnel? Comments:	☑ Yes ☐ No
6. Are preventive maintenance task schedules being met? Comments:	☑ Yes ☐ No
7. Does the plant experience any organic or hydraulic overloading? Comments:	☐ Yes ☑ No
8. Have there been any bypassing or overflows since the last inspection? Comments:	☐ Yes ☑ No
9. Is the standby generator (including power transfer switch) operational and exercised regularly? Comments: **The backup generator is out of service.**	☐ Yes ☑ No
10. Is the plant alarm system operational and tested regularly? Comments: **There are no alarms at the WWTP. Plant is required to meet class II reliability.**	☐ Yes ☐ No

VA DEQ Focused CEI Tech/Lab Inspection Report

Permit #	VA0062189

TECHNICAL INSPECTION

11. Is sludge disposed of in accordance with the approved sludge management plan? Comments:	☑ Yes ☐ No
12. Is septage received? • If so, is septage loading controlled, and are appropriate records maintained? Comments:	☐ Yes ☑ No
13. Are all plant records (operational logs, equipment maintenance, industrial waste contributors, sampling and testing) available for review and are records adequate? Comments:	☑ Yes ☐ No

14. Which of the following records does the plant maintain?

☑ Operational logs ☑ Instrument maintenance & calibration

☑ Mechanical equipment maintenance ☐ Industrial Waste Contribution (Municipal facilities)

Comments:

15. What does the operational log contain?

☑ Visual observations ☑ Flow Measurement ☑ Laboratory results ☑ Process adjustments

☐ Control calculations ☐ Other (specify)

Comments:

16. What do the mechanical equipment records contain?

☑ As built plans and specs ☑ Manufacturers instructions ☑ Lubrication schedules

☐ Spare parts inventory ☑ Equipment/parts suppliers

☐ Other (specify)

Comments:

17. What do the industrial waste contribution records contain (Municipal only)?

☐ Waste characteristics ☐ Impact on plant ☐ Locations and discharge types

☐ Other (specify) NA

Comments:

18. Which of the following records are kept at the plant and available to personnel?

☑ Equipment maintenance records ☑ Operational log ☐ Industrial contributor records

☑ Instrumentation records ☑ Sampling and testing records

Comments:

19. List records not normally available to plant personnel and their location: **None**

Comments:

20. Are the records maintained for the required time period (three or five years)? Comments:	☑ Yes ☐ No

Permit #	VA0062189

UNIT PROCESS EVALUATION SUMMARY SHEET

UNIT PROCESS	APPLICABLE	PROBLEMS*	COMMENTS
Sewage Pumping	Y	1	*The community's one pump station has been out of service for about two years.* According to Mr. Morefield (telephone Aug 14, 2013), the pumps and piping are in stock, the control panel is being rebuilt; as soon as it is done, all will be installed, anticipate by the end of October 2013.
Ponds/Lagoons	Y		*Three aerated ponds in series. The sludge depth was checked in all ponds in Spring 2013.*
Secondary Sedimentation	Y		*Two clarifiers, operated independently.*
Chlorination	Y		*Two sodium hypochlorite tablet feeders*
Dechlorination	Y		*Two sodium bisulfite tablet feeders*
Post Aeration	Y		*Cascade aeration*
Flow Measurement (Effluent)	Y		*Parshall flume with ultrasonic flow sensor/transmitter. Annual calibration was performed on 5-30-13. The effluent flow reading was 50 gpm at time of this inspection. The flow meter is left turned on even when there is no effluent flow- operators said they lose all data if it is turned off. Mr. Morefield said this unit is due to be replaced.*
Plant Outfall	Y		

UNIT PROCESS	APPLICABLE	PROBLEMS*	COMMENTS
Sludge Pumping	Y		Sludge from the clarifiers is returned to distribution box A.
Flotation Thickening (DAF)			
Gravity Thickening			
Aerobic Digestion			
Anaerobic Digestion			
Lime Stabilization			
Composting			
Land Application (Sludge)			

* Problem Codes

1. Unit Needs Attention
2. Abnormal Influent/Effluent
3. Evidence of Equipment Failure
4. Unapproved Modification or Temporary Repair
5. Evidence of Process Upset
6. Other (explain in comments)

Permit #	0062189

INSPECTION OVERVIEW AND CONDITION OF TREATMENT UNITS

- **Influent enters the plant through distribution box A, from which it may be sent to any of the three aerated ponds. The current valve configuration sends all influent in to pond 1, then to the other two in series.**
- **The ponds provide enough holding capacity that the plant discharge is intermittent.**
- **To discharge, water from the ponds is sent to Distribution Box D and is pumped into the two clarifiers. The operators recently installed a three foot staff gage inside the distribution box. The staff gage is positioned so that operators can measure depth up to five feet. Mr. Triplett explained that by monitoring the water depth in the distribution box, operators can have an idea of how much the water level in the ponds is dropping during plant discharge.**
- **At the time of this inspection, the water in Distribution Box D was over the top mark of the staff gage (>5 ft in distribution box).**
- **Now one pump from Distribution Box D to clarifiers – replaced the 2 submersible pumps seen in 2011.**
- **Distribution box D discharge is split to two parallel clarifiers, both in service. Water from each clarifier goes to its own chlorine tablet feeder, contact tank, and sodium bisulfite tablet feeder. Mr. Clemens said he uses just one sleeve for each feeder.**
- **Flow from each clarifier passes under a baffle/skimmer and over a weir, than enters a tablet feeder for chlorination. Passes though a chlorine contact tank and dechlor tablet feeder.**
- **Flow from the two tablet feeders joins prior to the Parshall flume and then discharges to the step cascade and into the creek.**
- **The Parshall flume is quite narrow. When we first got there, flow readings were low - Mr. Clemens discovered a piece of derbies blocking the flume.**
- **Outfall 001 in acceptable condition. Area is naturally mushy.**
- **Steps from the control building to the aerated ponds and the old steps/dock in the ponds have been removed. Vehicles now have better access to the treatment processes if needed.**
- **The Community has one pump station that serves three residences on the east side of Rt. 611. This pump station has been out of service for over two years. Water from the pump station is pumped and hauled to the WWTP about once per week. The pump truck delivers the wastewater to the manhole just inside fence near control building, where it mixes with the regular influent flow prior to Distribution Box A.**
- **The staff has been working on removing brush and vines from the fence surrounding the plant.**
- **Mr. Clemens said monitoring well #4 was currently inaccessible; a tree fell and was blocking access. Davey Tree was scheduled to come out during the week of July 29th to remove it.**
- **Mr. Clemens also stated that the pathway between the monitoring wells was pretty overgrown. A crew was planned to clear vegetation to improve access.**
- **The telephone line to the control building was not operational.**

VA DEQ Focused CEI Tech/Lab Inspection Report

Permit #	VA0062189

LABORATORY INSPECTION

PRESENT DURING INSPECTION:	**Allan Clemens, Charlie Triplett – Loudoun Water**

1.	Do lab records include sampling date/time, analysis date/time, sample location, test method, test results, analyst's initials, instrument calibration and maintenance, and Certificate of Analysis? ☑ Sampling Date/Time ☑ Analysis Date/Time ☑ Sample Location ☑ Test Method ☑ Test Results ☑ Analyst's Initials ☑ Instrument Calibration & Maintenance ☐ Chain of Custody ☐ Certificate of Analysis	
2.	Are Discharge Monitoring Reports complete and correct? Month(s) reviewed: Dec 2012 - Feb 2013	☑ Yes ☐ No
3.	Are sample location(s) according to permit requirements (after all treatment unless otherwise specified)?	☑ Yes ☐ No
4.	Are sample collection, preservation, and holding times appropriate; and is sampling equipment adequate?	☑ Yes ☐ No
5.	Are grab and composite samples representative of the flow and the nature of the monitored activity?	☑ Yes ☐ No
6.	If analysis is performed at another location, are shipping procedures adequate? List parameters and name & address of contract lab(s): **BOD5 & TSS** **Loudoun Water Regional Laboratory** **VELAP ID 450115** **44961 Loudoun Water Way** **Ashburn, VA 20146** **Ammonia** **Microbac Laboratories** **NELAC ID – 460022-1834 see note below** **2101 Van Deman St** **Baltimore, MD 21224** **The Baltimore Division of Microbac voluntarily gave up their Pennsylvania environmental lab accreditation (and thus secondary accreditation w/ VELAP) effective July 2, 2013. Ammonia-N samples are currently sent to Pace Analytical Laboratories.** **Pace Analytical Services, Inc.** **VELAP ID 460222** **2225 Riverside Dr.** **Ashville, NC 28804** **(828) 254-7176**	☑ Yes ☐ No
7.	Are annual thermometer calibration(s) adequate?	☑ Yes ☐ No

8. Parameters evaluated during this inspection (attach checklists):

- ☑ pH
- ☐ Temperature
- ☑ Total Residual Chlorine
- ☑ Dissolved Oxygen
- ☐ ~~Biochemical Oxygen Demand~~
- ☐ ~~Total Suspended Solids~~
- ☐ Other (specify) _____
- ☐ Other (specify) _____
- ☐ Other (specify) _____

Comments:

Permit #	VA0062189

EFFLUENT FIELD DATA:

Flow	59 GPM	**Dissolved Oxygen**	7.65 mg/L	**TRC (Contact Tank)**	3.5 mg/L
pH	7.9 S.U.	**Temperature**	°C	**TRC (Final Effluent)**	<QL mg/L
Was a Sampling Inspection conducted?	☐ Yes (see Sampling Inspection Report) ☑ No				

CONDITION OF OUTFALL AND EFFLUENT CHARACTERISTICS:

1. Type of outfall: ☑ Shore based ☐ Submerged Diffuser? ☐ Yes ☑ No
2. Are the outfall and supporting structures in good condition? ☑ Yes ☐ No
3. Final Effluent (evidence of following problems): ☐ Sludge bar ☐ Grease ☐ Turbid effluent ☐ Visible foam ☐ Unusual color ☐ Oil sheen
4. Is there a visible effluent plume in the receiving stream? ☐ Yes ☑ No
5. Receiving stream: ☑ No observed problems ☐ Indication of problems (explain below)

Comments:

REQUEST for CORRETIVE ACTION:

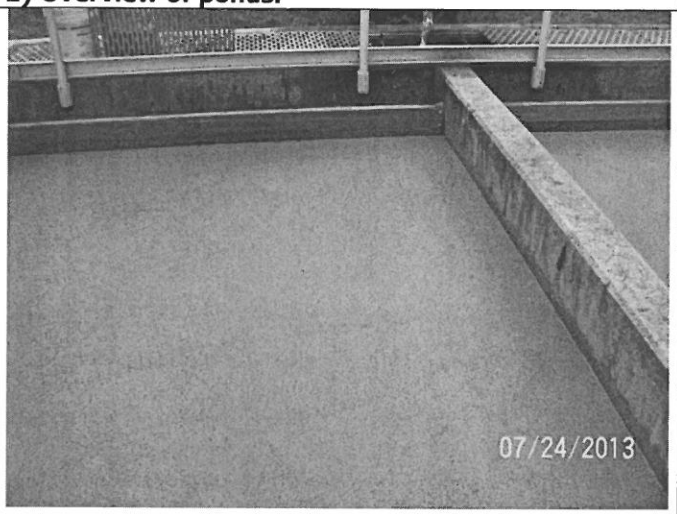
1. **Please see the summary at beginning of this report.**

NOTES and COMMENTS:

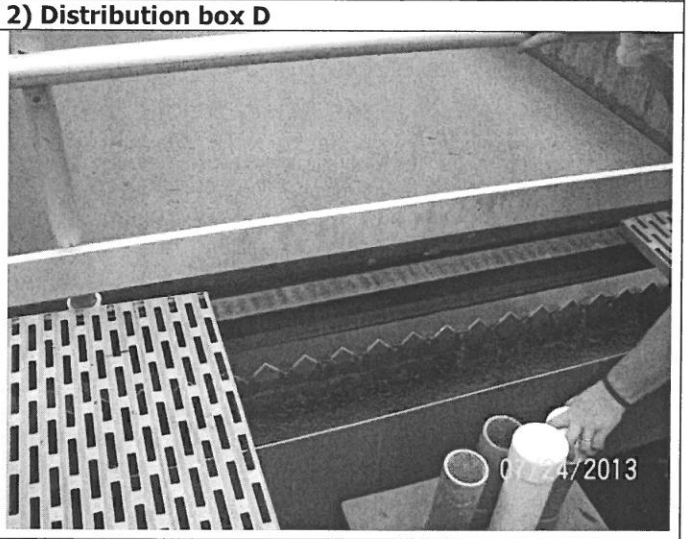
On August 15, 2013, Mr. Morefield informed me via email that the effluent flow meter had been replaced. The new flow meter is a Greyline Ultrasonic Model# OCF 5.0; Serial # 52749. He also informed me that the new pumps had been installed in the pump station; the staff was still waiting on the control box.

1) Overview of ponds.

2) Distribution box D

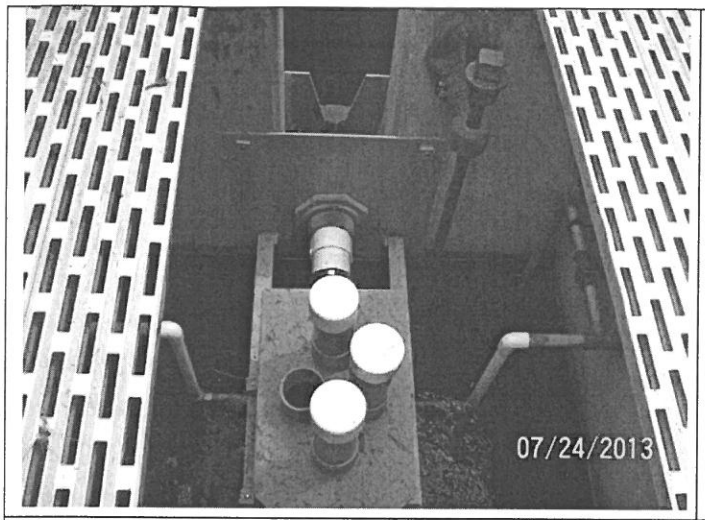


3) Clarifier.

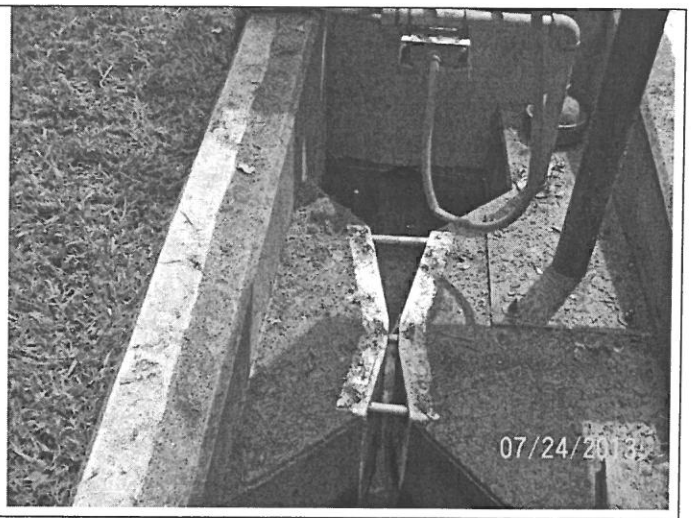


4) Clarifier and chlorine tablet feeder.

Facility name: St. Louis Community WWTP
VPDES Permit No. VA0062189
Site Inspection Date: July 25, 2013
Photos & Layout by: S. Allen



5) Sodium bisulfite tablet feeder (photo brightened



6) Effluent Parshall flume and flow meter

7) Outfall 001.

8) Rt. 790 Bridge over Beaverdam Creek.

9) Staff gage at bridge for in stream flow measurement.

Facility name: St. Louis Community WWTP
VPDES Permit No. VA0062189
Site Inspection Date: July 25, 2013
Photos & Layout by: S. Allen

Attachment 5

To:	Alison Thompson
From:	Rebecca Shoemaker
Date:	March 23, 2016
Subject:	Planning Statement for St Louis WWTP
Permit Number:	VA0062189

Information for Outfall 001:

Discharge Type:	Municipal
Discharge Flow:	0.086 MGD
Receiving Stream:	Beaverdam Creek, UT
Latitude / Longitude:	39° 00' 21" N 77° 47' 45" W
Rivermile:	0.005
Streamcode:	1aXME
Waterbody:	VAN-A07R; PL11
Water Quality Standards:	Class III, Section 9, No special standards
Drainage Area:	0.59 sq miles

1. Please provide water quality monitoring information for the receiving stream segment. If there is not monitoring information for the receiving stream segment, please provide information on the nearest downstream monitoring station, including how far downstream the monitoring station is from the outfall.

This facility discharges to an unnamed tributary (streamcode XME), which has been neither monitored nor assessed. Streamcode XME discharges to another unnamed tributary (streamcode XGN), which discharges to another unnamed tributary (streamcode XGU), which discharges to Beaverdam Creek (streamcode BEC). DEQ freshwater probabilistic monitoring station 1aXGU000.18 is located downstream from Route 790 on streamcode XGU, approximately 0.68 mile downstream from Outfall 001. The following is the water quality summary for this unnamed tributary, as taken from the Draft 2014 Integrated Report:

Class III, Section 9.

DEQ monitoring stations located in this unnamed tributary (XGU):

- *freshwater probabilistic monitoring station 1aXGU000.18, downstream from Route 790*

Biological and associated chemical monitoring indicate that the aquatic life, fish consumption and wildlife uses are fully supporting. An observed effect is noted for the aquatic life use based on one exceedance of the consensus based probable effects concentration (PEC) sediment screening values for chlordane (17.6 ppb, dry weight).

DEQ ambient monitoring station 1aBEC011.76 is located on Beaverdam Creek at Route 630, approximately 1.14 miles upstream from the confluence of unnamed tributary XGU with Beaverdam Creek. The following is the water quality summary for this segment of Beaverdam Creek, as taken from the Draft 2014 Integrated Report:

Class III, Section 9.

DEQ monitoring stations located in this segment of Beaverdam Creek:

- *ambient water quality monitoring station 1aBEC011.76, at Route 630*

E. coli monitoring finds a bacterial impairment, resulting in an impaired classification for the recreation use. This impairment is nested within the downstream completed bacteria TMDL for Beaverdam Creek. The aquatic life use is considered fully supporting. The fish consumption and wildlife uses were not assessed.

2. Does this facility discharge to a stream segment on the 303(d) list? If yes, please fill out Table A.

No.

3. Are there any 303(d) listed impairments that are relevant to this discharge? If yes, please fill out Table B.

Yes.

Table B. Information on Downstream 303(d) Impairments and TMDLs

Waterbody Name	Impaired Use	Cause	Distance From Outfall	TMDL completed	WLA	Basis for WLA	TMDL Schedule
Impairment Information in the Draft 2014 Integrated Report							
Beaverdam Creek	Recreation	*E. coli*	0.81 mile	Goose Creek Bacteria TMDL 5/1/2003	2.38E+11 cfu/year fecal coliform bacteria 1.50E+11 cfu/year *E. coli* bacteria*	200 cfu/100 ml fecal coliform 126 cfu/100 ml *E. coli** --- 0.086 MGD	---
Goose Creek Reservoir	Fish Consumption	PCBs	24 miles	No	---	---	2018
Goose Creek	Aquatic Life	Benthic Macro-invertebrates	25 miles	Goose Creek Watershed Benthic (Sediment) 04/26/2004	3.9 tons sediment/ year**	TSS concentration 30 mg/L --- 0.086 MGD	---

* The WLA is expressed in the TMDL as both cfu/year fecal coliform and *E. coli* bacteria.

**This facility was assigned a total WLA of 19.5 tons/year in the Benthic TMDL for the Goose Creek watershed. This total WLA was calculated based upon the permitted maximum average concentration for TSS (mg/L) and an assumption of the facility operating at five times the design flow. The factor of five for the design flow was used as a conservative measure to build in future growth in the watershed. Although the future growth for the watershed was determined by the design flow of each facility within in the watershed, the future growth is available for both new and expanding permits in the watershed. The actual WLA for this facility without including the future growth is 3.9 tons/year.

4. Is there monitoring or other conditions that Planning/Assessment needs in the permit?

There is a completed downstream TMDL for the aquatic life use impairment for the Chesapeake Bay. However, the Bay TMDL and the WLAs contained within the TMDL are not addressed in this planning statement.

In support for the PCB impairment listed for the Goose Creek Reservoir and for the farthest downstream segment of Goose Creek, this facility is a candidate for low-level PCB monitoring, based upon its designation as a minor municipal facility. Low-level PCB analysis uses EPA Method 1668, which is capable of detecting low-level concentrations for all 209 PCB congeners. DEQ staff has concluded that low-level PCB monitoring is not warranted for this facility, as it is a small wastewater treatment facility and is not expected to be a source of PCBs. Based upon this information, this facility will not be requested to monitor for low-level PCBs.

5. Fact Sheet Requirements – Please provide information regarding any drinking water intakes located within a 5 mile radius of the discharge point.

There are no public water supply intakes located within five miles of this discharge.

Attachment 6

FRESHWATER
WATER QUALITY CRITERIA / WASTELOAD ALLOCATION ANALYSIS

Facility Name: St Louis WWTP Permit No.: VA0062189

Receiving Stream: Beaverdam Creek, UT Version: OWP Guidance Memo 00-2011 (8/24/00)

Stream Information

Mean Hardness (as CaCO3) =		mg/L
90% Temperature (Annual) =		deg C
90% Temperature (Wet season) =		deg C
90% Maximum pH =		SU
10% Maximum pH =		SU
Tier Designation (1 or 2) =	1	
Public Water Supply (PWS) Y/N? =	n	
Trout Present Y/N? =	n	
Early Life Stages Present Y/N? =	y	

Stream Flows

1Q10 (Annual) =	0	MGD
7Q10 (Annual) =	0	MGD
30Q10 (Annual) =	0	MGD
1Q10 (Wet season) =	0	MGD
30Q10 (Wet season) =	0	MGD
30Q5 =	0	MGD
Harmonic Mean =	0	MGD

Mixing Information

Annual - 1Q10 Mix =	100	%
- 7Q10 Mix =	100	%
- 30Q10 Mix =	100	%
Wet Season - 1Q10 Mix =	100	%
- 30Q10 Mix =	100	%

Effluent Information

Mean Hardness (as CaCO3) =	50	mg/L
90% Temp (Annual) =	25	deg C
90% Temp (Wet season) =	15	deg C
90% Maximum pH =	8.2	SU
10% Maximum pH =	7.5	SU
Discharge Flow =	0.086	MGD

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Acenapthene	0	--	--	na	9.9E+02	--	--	na	9.9E+02	--	--	--	--	--	--	--	--	--	--	na	9.9E+02
Acrolein	0	--	--	na	9.3E+00	--	--	na	9.3E+00	--	--	--	--	--	--	--	--	--	--	na	9.3E+00
Acrylonitrile [C]	0	--	--	na	2.5E+00	--	--	na	2.5E+00	--	--	--	--	--	--	--	--	--	--	na	2.5E+00
Aldrin [C]	0	3.0E+00	--	na	5.0E-04	3.0E+00	--	na	5.0E-04	--	--	--	--	--	--	--	--	3.0E+00	--	na	5.0E-04
Ammonia-N (mg/l) (Yearly)	0	5.73E+00	9.12E-01	na	--	5.73E+00	9.12E-01	na	--	--	--	--	--	--	--	--	--	5.73E+00	9.12E-01	na	--
Ammonia-N (mg/l) (High Flow)	0	5.73E+00	1.74E+00	na	--	5.73E+00	1.74E+00	na	--	--	--	--	--	--	--	--	--	5.73E+00	1.74E+00	na	--
Anthracene	0	--	--	na	4.0E+04	--	--	na	4.0E+04	--	--	--	--	--	--	--	--	--	--	na	4.0E+04
Antimony	0	--	--	na	6.4E+02	--	--	na	6.4E+02	--	--	--	--	--	--	--	--	--	--	na	6.4E+02
Arsenic	o	3.4E+02	1.5E+02	na	--	3.4E+02	1.5E+02	na	--	--	--	--	--	--	--	--	--	3.4E+02	1.5E+02	na	--
Barium	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Benzene [C]	0	--	--	na	5.1E+02	--	--	na	5.1E+02	--	--	--	--	--	--	--	--	--	--	na	5.1E+02
Benzidine [C]	0	--	--	na	2.0E-03	--	--	na	2.0E-03	--	--	--	--	--	--	--	--	--	--	na	2.0E-03
Benzo (a) anthracene [C]	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	--	--	na	1.8E-01
Benzo (b) fluoranthene [C]	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	--	--	na	1.8E-01
Benzo (k) fluoranthene [C]	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	--	--	na	1.8E-01
Benzo (a) pyrene [C]	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	--	--	na	1.8E-01
Bis2-Chloroethyl Ether [C]	0	--	--	na	5.3E+00	--	--	na	5.3E+00	--	--	--	--	--	--	--	--	--	--	na	5.3E+00
Bis2-Chloroisopropyl Ether	0	--	--	na	6.5E+04	--	--	na	6.5E+04	--	--	--	--	--	--	--	--	--	--	na	6.5E+04
Bis 2-Ethylhexyl Phthalate [C]	0	--	--	na	2.2E+01	--	--	na	2.2E+01	--	--	--	--	--	--	--	--	--	--	na	2.2E+01
Bromoform [C]	0	--	--	na	1.4E+03	--	--	na	1.4E+03	--	--	--	--	--	--	--	--	--	--	na	1.4E+03
Butylbenzylphthalate	0	--	--	na	1.9E+03	--	--	na	1.9E+03	--	--	--	--	--	--	--	--	--	--	na	1.9E+03
Cadmium	0	1.8E+00	6.6E-01	na	--	1.8E+00	6.6E-01	na	--	--	--	--	--	--	--	--	--	1.8E+00	6.6E-01	na	--
Carbon Tetrachloride [C]	0	--	--	na	1.6E+01	--	--	na	1.6E+01	--	--	--	--	--	--	--	--	--	--	na	1.6E+01
Chlordane [C]	0	2.4E+00	4.3E-03	na	8.1E-03	2.4E+00	4.3E-03	na	8.1E-03	--	--	--	--	--	--	--	--	2.4E+00	4.3E-03	na	8.1E-03
Chloride	0	8.6E+05	2.3E+05	na	--	8.6E+05	2.3E+05	na	--	--	--	--	--	--	--	--	--	8.6E+05	2.3E+05	na	--
TRC	0	1.9E+01	1.1E+01	na	--	1.9E+01	1.1E+01	na	--	--	--	--	--	--	--	--	--	1.9E+01	1.1E+01	na	--
Chlorobenzene	0	--	--	na	1.6E+03	--	--	na	1.6E+03	--	--	--	--	--	--	--	--	--	--	na	1.6E+03

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Chlorodibromomethane[C]	0	--	--	na	1.3E+02	--	--	na	1.3E+02	--	--	--	--	--	--	--	--	--	--	na	1.3E+02
Chloroform	0	--	--	na	1.1E+04	--	--	na	1.1E+04	--	--	--	--	--	--	--	--	--	--	na	1.1E+04
2-Chloronaphthalene	0	--	--	na	1.6E+03	--	--	na	1.6E+03	--	--	--	--	--	--	--	--	--	--	na	1.6E+03
2-Chlorophenol	0	--	--	na	1.5E+02	--	--	na	1.5E+02	--	--	--	--	--	--	--	--	--	--	na	1.5E+02
Chlorpyrifos	0	8.3E-02	4.1E-02	na	--	8.3E-02	4.1E-02	na	--	--	--	--	--	--	--	--	--	8.3E-02	4.1E-02	na	--
Chromium III	0	3.2E+02	4.2E+01	na	--	3.2E+02	4.2E+01	na	--	--	--	--	--	--	--	--	--	3.2E+02	4.2E+01	na	--
Chromium VI	0	1.6E+01	1.1E+01	na	--	1.6E+01	1.1E+01	na	--	--	--	--	--	--	--	--	--	1.6E+01	1.1E+01	na	--
Chromium, Total	0	--	--	1.0E+02	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Chrysene [C]	0	--	--	na	1.8E-02	--	--	na	1.8E-02	--	--	--	--	--	--	--	--	--	--	na	1.8E-02
Copper	0	7.0E+00	5.0E+00	na	--	7.0E+00	5.0E+00	na	--	--	--	--	--	--	--	--	--	7.0E+00	5.0E+00	na	--
Cyanide, Free	0	2.2E+01	5.2E+00	na	1.6E+04	2.2E+01	5.2E+00	na	1.6E+04	--	--	--	--	--	--	--	--	2.2E+01	5.2E+00	na	1.6E+04
DDD [C]	0	--	--	na	3.1E-03	--	--	na	3.1E-03	--	--	--	--	--	--	--	--	--	--	na	3.1E-03
DDE [C]	0	--	--	na	2.2E-03	--	--	na	2.2E-03	--	--	--	--	--	--	--	--	--	--	na	2.2E-03
DDT [C]	0	1.1E+00	1.0E-03	na	2.2E-03	1.1E+00	1.0E-03	na	2.2E-03	--	--	--	--	--	--	--	--	1.1E+00	1.0E-03	na	2.2E-03
Demeton	0	--	1.0E-01	na	--	--	1.0E-01	na	--	--	--	--	--	--	--	--	--	--	1.0E-01	na	--
Diazinon	0	1.7E-01	1.7E-01	na	--	1.7E-01	1.7E-01	na	--	--	--	--	--	--	--	--	--	1.7E-01	1.7E-01	na	--
Dibenz(a,h)anthracene [C]	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	--	--	na	1.8E-01
1,2-Dichlorobenzene	0	--	--	na	1.3E+03	--	--	na	1.3E+03	--	--	--	--	--	--	--	--	--	--	na	1.3E+03
1,3-Dichlorobenzene	0	--	--	na	9.6E+02	--	--	na	9.6E+02	--	--	--	--	--	--	--	--	--	--	na	9.6E+02
1,4-Dichlorobenzene	0	--	--	na	1.9E+02	--	--	na	1.9E+02	--	--	--	--	--	--	--	--	--	--	na	1.9E+02
3,3-Dichlorobenzidine[C]	0	--	--	na	2.8E-01	--	--	na	2.8E-01	--	--	--	--	--	--	--	--	--	--	na	2.8E-01
Dichlorobromomethane [C]	0	--	--	na	1.7E+02	--	--	na	1.7E+02	--	--	--	--	--	--	--	--	--	--	na	1.7E+02
1,2-Dichloroethane [C]	0	--	--	na	3.7E+02	--	--	na	3.7E+02	--	--	--	--	--	--	--	--	--	--	na	3.7E+02
1,1-Dichloroethylene	0	--	--	na	7.1E+03	--	--	na	7.1E+03	--	--	--	--	--	--	--	--	--	--	na	7.1E+03
1,2-trans-dichloroethylene	0	--	--	na	1.0E+04	--	--	na	1.0E+04	--	--	--	--	--	--	--	--	--	--	na	1.0E+04
2,4-Dichlorophenol	0	--	--	na	2.9E+02	--	--	na	2.9E+02	--	--	--	--	--	--	--	--	--	--	na	2.9E+02
2,4-Dichlorophenoxy acetic acid (2,4-D)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
1,2-Dichloropropane[C]	0	--	--	na	1.5E+02	--	--	na	1.5E+02	--	--	--	--	--	--	--	--	--	--	na	1.5E+02
1,3-Dichloropropene [C]	0	--	--	na	2.1E+02	--	--	na	2.1E+02	--	--	--	--	--	--	--	--	--	--	na	2.1E+02
Dieldrin [C]	0	2.4E-01	5.6E-02	na	5.4E-04	2.4E-01	5.6E-02	na	5.4E-04	--	--	--	--	--	--	--	--	2.4E-01	5.6E-02	na	5.4E-04
Diethyl Phthalate	0	--	--	na	4.4E+04	--	--	na	4.4E+04	--	--	--	--	--	--	--	--	--	--	na	4.4E+04
2,4-Dimethylphenol	0	--	--	na	8.5E+02	--	--	na	8.5E+02	--	--	--	--	--	--	--	--	--	--	na	8.5E+02
Dimethyl Phthalate	0	--	--	na	1.1E+06	--	--	na	1.1E+06	--	--	--	--	--	--	--	--	--	--	na	1.1E+06
Di-n-Butyl Phthalate	0	--	--	na	4.5E+03	--	--	na	4.5E+03	--	--	--	--	--	--	--	--	--	--	na	4.5E+03
2,4 Dinitrophenol	0	--	--	na	5.3E+03	--	--	na	5.3E+03	--	--	--	--	--	--	--	--	--	--	na	5.3E+03
2-Methyl-4,6-Dinitrophenol	0	--	--	na	2.8E+02	--	--	na	2.8E+02	--	--	--	--	--	--	--	--	--	--	na	2.8E+02
2,4-Dinitrotoluene [C]	0	--	--	na	3.4E+01	--	--	na	3.4E+01	--	--	--	--	--	--	--	--	--	--	na	3.4E+01
Dioxin 2,3,7,8-tetrachlorodibenzo-p-dioxin	0	--	--	na	5.1E-08	--	--	na	5.1E-08	--	--	--	--	--	--	--	--	--	--	na	5.1E-08
1,2-Diphenylhydrazine[C]	0	--	--	na	2.0E+00	--	--	na	2.0E+00	--	--	--	--	--	--	--	--	--	--	na	2.0E+00
Alpha-Endosulfan	0	2.2E-01	5.6E-02	na	8.9E+01	2.2E-01	5.6E-02	na	8.9E+01	--	--	--	--	--	--	--	--	2.2E-01	5.6E-02	na	8.9E+01
Beta-Endosulfan	0	2.2E-01	5.6E-02	na	8.9E+01	2.2E-01	5.6E-02	na	8.9E+01	--	--	--	--	--	--	--	--	2.2E-01	5.6E-02	na	8.9E+01
Alpha + Beta Endosulfan	0	2.2E-01	5.6E-02	--	--	2.2E-01	5.6E-02	--	--	--	--	--	--	--	--	--	--	2.2E-01	5.6E-02	--	--
Endosulfan Sulfate	0	--	--	na	8.9E+01	--	--	na	8.9E+01	--	--	--	--	--	--	--	--	--	--	na	8.9E+01
Endrin	0	8.6E-02	3.6E-02	na	6.0E-02	8.6E-02	3.6E-02	na	6.0E-02	--	--	--	--	--	--	--	--	8.6E-02	3.6E-02	na	6.0E-02
Endrin Aldehyde	0	--	--	na	3.0E-01	--	--	na	3.0E-01	--	--	--	--	--	--	--	--	--	--	na	3.0E-01

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Ethylbenzene	0	--	--	na	2.1E+03	--	--	na	2.1E+03	--	--	--	--	--	--	--	--	--	--	na	2.1E+03
Fluoranthene	0	--	--	na	1.4E+02	--	--	na	1.4E+02	--	--	--	--	--	--	--	--	--	--	na	1.4E+02
Fluorene	0	--	--	na	5.3E+03	--	--	na	5.3E+03	--	--	--	--	--	--	--	--	--	--	na	5.3E+03
Foaming Agents	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Guthion	0	--	1.0E-02	na	--	--	1.0E-02	na	--	--	--	--	--	--	--	--	--	--	1.0E-02	na	--
Heptachlor [C]	0	5.2E-01	3.8E-03	na	7.9E-04	5.2E-01	3.8E-03	na	7.9E-04	--	--	--	--	--	--	--	--	5.2E-01	3.8E-03	na	7.9E-04
Heptachlor Epoxide [C]	0	5.2E-01	3.8E-03	na	3.9E-04	5.2E-01	3.8E-03	na	3.9E-04	--	--	--	--	--	--	--	--	5.2E-01	3.8E-03	na	3.9E-04
Hexachlorobenzene [C]	0	--	--	na	2.9E-03	--	--	na	2.9E-03	--	--	--	--	--	--	--	--	--	--	na	2.9E-03
Hexachlorobutadiene [C]	0	--	--	na	1.8E+02	--	--	na	1.8E+02	--	--	--	--	--	--	--	--	--	--	na	1.8E+02
Hexachlorocyclohexane Alpha-BHC [C]	0	--	--	na	4.9E-02	--	--	na	4.9E-02	--	--	--	--	--	--	--	--	--	--	na	4.9E-02
Hexachlorocyclohexane Beta-BHC [C]	0	--	--	na	1.7E-01	--	--	na	1.7E-01	--	--	--	--	--	--	--	--	--	--	na	1.7E-01
Hexachlorocyclohexane Gamma-BHC [C] (Lindane)	0	9.5E-01	na	na	1.8E+00	9.5E-01	--	na	1.8E+00	--	--	--	--	--	--	--	--	9.5E-01	--	na	1.8E+00
Hexachlorocyclopentadiene	0	--	--	na	1.1E+03	--	--	na	1.1E+03	--	--	--	--	--	--	--	--	--	--	na	1.1E+03
Hexachloroethane [C]	0	--	--	na	3.3E+01	--	--	na	3.3E+01	--	--	--	--	--	--	--	--	--	--	na	3.3E+01
Hydrogen Sulfide	0	--	2.0E+00	na	--	--	2.0E+00	na	--	--	--	--	--	--	--	--	--	--	2.0E+00	na	--
Indeno (1,2,3-cd) pyrene [C]	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	--	--	na	1.8E-01
Iron	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Isophorone [C]	0	--	--	na	9.6E+03	--	--	na	9.6E+03	--	--	--	--	--	--	--	--	--	--	na	9.6E+03
Kepone	0	--	0.0E+00	na	--	--	0.0E+00	na	--	--	--	--	--	--	--	--	--	--	0.0E+00	na	--
Lead	0	4.9E+01	5.6E+00	na	--	4.9E+01	5.6E+00	na	--	--	--	--	--	--	--	--	--	4.9E+01	5.6E+00	na	--
Malathion	0	--	1.0E-01	na	--	--	1.0E-01	na	--	--	--	--	--	--	--	--	--	--	1.0E-01	na	--
Manganese	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Mercury	0	1.4E+00	7.7E-01	--	--	1.4E+00	7.7E-01	--	--	--	--	--	--	--	--	--	--	1.4E+00	7.7E-01	--	--
Methyl Bromide	0	--	--	na	1.5E+03	--	--	na	1.5E+03	--	--	--	--	--	--	--	--	--	--	na	1.5E+03
Methylene Chloride [C]	0	--	--	na	5.9E+03	--	--	na	5.9E+03	--	--	--	--	--	--	--	--	--	--	na	5.9E+03
Methoxychlor	0	--	3.0E-02	na	--	--	3.0E-02	na	--	--	--	--	--	--	--	--	--	--	3.0E-02	na	--
Mirex	0	--	0.0E+00	na	--	--	0.0E+00	na	--	--	--	--	--	--	--	--	--	--	0.0E+00	na	--
Nickel	0	1.0E+02	1.1E+01	na	4.6E+03	1.0E+02	1.1E+01	na	4.6E+03	--	--	--	--	--	--	--	--	1.0E+02	1.1E+01	na	4.6E+03
Nitrate (as N)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Nitrobenzene	0	--	--	na	6.9E+02	--	--	na	6.9E+02	--	--	--	--	--	--	--	--	--	--	na	6.9E+02
N-Nitrosodimethylamine [C]	0	--	--	na	3.0E+01	--	--	na	3.0E+01	--	--	--	--	--	--	--	--	--	--	na	3.0E+01
N-Nitrosodiphenylamine [C]	0	--	--	na	6.0E+01	--	--	na	6.0E+01	--	--	--	--	--	--	--	--	--	--	na	6.0E+01
N-Nitrosodi-n-propylamine [C]	0	--	--	na	5.1E+00	--	--	na	5.1E+00	--	--	--	--	--	--	--	--	--	--	na	5.1E+00
Nonylphenol	0	2.8E+01	6.6E+00	--	--	2.8E+01	6.6E+00	na	--	--	--	--	--	--	--	--	--	2.8E+01	6.6E+00	na	--
Parathion	0	6.5E-02	1.3E-02	na	--	6.5E-02	1.3E-02	na	--	--	--	--	--	--	--	--	--	6.5E-02	1.3E-02	na	--
PCB Total [C]	0	--	1.4E-02	na	6.4E-04	--	1.4E-02	na	6.4E-04	--	--	--	--	--	--	--	--	--	1.4E-02	na	6.4E-04
Pentachlorophenol [C]	0	1.4E+01	1.1E+01	na	3.0E+01	1.4E+01	1.1E+01	na	3.0E+01	--	--	--	--	--	--	--	--	1.4E+01	1.1E+01	na	3.0E+01
Phenol	0	--	--	na	8.6E+05	--	--	na	8.6E+05	--	--	--	--	--	--	--	--	--	--	na	8.6E+05
Pyrene	0	--	--	na	4.0E+03	--	--	na	4.0E+03	--	--	--	--	--	--	--	--	--	--	na	4.0E+03
Radionudides	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Gross Alpha Activity (pCi/L)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Beta and Photon Activity (mrem/yr)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Radium 226 + 228 (pCi/L)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Uranium (ug/l)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				**Most Limiting Allocations**			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	**Acute**	**Chronic**	**HH (PWS)**	**HH**
Selenium, Total Recoverable	0	2.0E+01	5.0E+00	na	4.2E+03	2.0E+01	5.0E+00	na	4.2E+03	--	--	--	--	--	--	--	--	**2.0E+01**	**5.0E+00**	**na**	**4.2E+03**
Silver	0	1.0E+00	--	na	--	1.0E+00	--	na	--	--	--	--	--	--	--	--	--	**1.0E+00**	**--**	**na**	**--**
Sulfate	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
1,1,2,2-Tetrachloroethane[C]	0	--	--	na	4.0E+01	--	--	na	4.0E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**4.0E+01**
Tetrachloroethylene[C]	0	--	--	na	3.3E+01	--	--	na	3.3E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**3.3E+01**
Thallium	0	--	--	na	4.7E-01	--	--	na	4.7E-01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**4.7E-01**
Toluene	0	--	--	na	6.0E+03	--	--	na	6.0E+03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**6.0E+03**
Total dissolved solids	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
Toxaphene [C]	0	7.3E-01	2.0E-04	na	2.8E-03	7.3E-01	2.0E-04	na	2.8E-03	--	--	--	--	--	--	--	--	**7.3E-01**	**2.0E-04**	**na**	**2.8E-03**
Tributyltin	0	4.6E-01	7.2E-02	na	--	4.6E-01	7.2E-02	na	--	--	--	--	--	--	--	--	--	**4.6E-01**	**7.2E-02**	**na**	**--**
1,2,4-Trichlorobenzene	0	--	--	na	7.0E+01	--	--	na	7.0E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**7.0E+01**
1,1,2-Trichloroethane[C]	0	--	--	na	1.6E+02	--	--	na	1.6E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.6E+02**
Trichloroethylene [C]	0	--	--	na	3.0E+02	--	--	na	3.0E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**3.0E+02**
2,4,6-Trichlorophenol[C]	0	--	--	na	2.4E+01	--	--	na	2.4E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**2.4E+01**
2-(2,4,5-Trichlorophenoxy) propionic acid (Silvex)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
Vinyl Chloride[C]	0	--	--	na	2.4E+01	--	--	na	2.4E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**2.4E+01**
Zinc	0	6.5E+01	6.6E+01	na	2.6E+04	6.5E+01	6.6E+01	na	2.6E+04	--	--	--	--	--	--	--	--	**6.5E+01**	**6.6E+01**	**na**	**2.6E+04**

Notes:

1. All concentrations expressed as micrograms/liter (ug/l), unless noted otherwise
2. Discharge flow is highest monthly average or Form 2C maximum for Industries and design flow for Municipals
3. Metals measured as Dissolved, unless specified otherwise
4. "C" indicates a carcinogenic parameter
5. Regular WLAs are mass balances (minus background concentration) using the % of stream flow entered above under Mixing Information. Antidegradation WLAs are based upon a complete mix.
6. Antideg. Baseline = (0.25(WQC - background conc.) + background conc.) for acute and chronic
   = (0.1(WQC - background conc.) + background conc.) for human health
7. WLAs established at the folowing stream flows: 1Q10 for Acute, 30Q10 for Chronic Ammonia, 7Q10 for Other Chronic, 30Q5 for Non-carcinogens and Harmonic Mean for Cardnogens. To apply mixing ratios from a model set the stream flow equal to (mixing ratio - 1), effluent flow equal to 1 and 100% mix.

Metal	Target Value (SSTV)
Antimony	6.4E+02
Arsenic	9.0E+01
Barium	na
Cadmium	3.9E-01
Chromium III	2.5E+01
Chromium VI	6.4E+00
Copper	2.8E+00
Iron	na
Lead	3.4E+00
Manganese	na
Mercury	4.6E-01
Nickel	6.8E+00
Selenium	3.0E+00
Silver	4.2E-01
Zinc	2.6E+01

Note: do not use QL's lower than the minimum QL's provided in agency guidance

Date	Flow (MGD)	pH (s.u.)	Temp (deg C)
3/18/2014	0.0695	6.7	5.1
3/19/2014	0.09	6.2	7.1
3/20/2014	0.0786	7.1	7.4
3/21/2014	0.0259	8.4	8.4
3/24/2014	0.0851	7.7	7.7
3/25/2014	0.07717	8.2	8.2
3/26/2014	0.07579	6.8	6.8
3/27/2014	0.0297	4.2	4.2
5/5/2014	0.091	7.8	16.9
5/6/2014	0.0836	7.7	17.6
5/7/2014	0.087	8.3	18.1
5/8/2014	0.0277	7.3	17.9
5/12/2014	0.0828	8.1	22.6
5/13/2014	0.0879	7.9	22.9
5/14/2014	0.1037	7.9	23.1
5/15/2014	0.0302	7.8	23.3
5/20/2014	0.0789	7.9	18.4
5/21/2014	0.0885	8.1	21.3
5/22/2014	0.1013	8.1	22.5
5/23/2014	0.0373	8	22.7
5/27/2014	0.0906	7.6	22.1
5/28/2014	0.0653	8.1	24.9
5/29/2014	0.0825	7.9	24.3
5/30/2014	0.0262	8.1	22.7
8/4/2014	0.0788	8	23.9
8/5/2014	0.0907	8.1	24.4
8/6/2014	0.097	8	25
8/7/2014	0.0317	8	25.7
8/11/2014	0.0795	7.9	23.2
8/12/2014	0.0807	8.1	24.9
8/13/2014	0.092	8.2	24.7
8/14/2014	0.0238	8.2	24.3
8/18/2014	0.0784	7.4	22.8
8/19/2014	0.0766	8.1	24.8
8/20/2014	0.0762	8.2	25.3
8/21/2014	0.0343	8.1	25
9/8/2014	0.0823	7.8	22.9
9/9/2014	0.0665	8	23.8
9/10/2014	0.0864	7.9	23.8
9/11/2014	0.0275	7.8	23.9
9/15/2014	0.0815	7.6	20.5
9/16/2014	0.0813	8	21.5
9/17/2014	0.0721	7.8	20.8
9/18/2014	0.0266	7.8	20.3
9/22/2014	0.0569	7.5	7.5
9/23/2014	0.0704	7.9	7.9
9/24/2014	0.0651	7.9	7.9
9/25/2014	0.0232	7.8	7.8
4/6/2015	0.072	8.1	
4/7/2015	0.071	7.5	
4/8/2015	0.066	7.6	
4/9/2015	0.029	7.4	
4/13/2015	0.065	7.9	
4/14/2015	0.071	7.8	
4/15/2015	0.065	7.9	
4/16/2015	0.025	8	
4/20/2015	0.069	7.8	
4/21/2015	0.072	7.9	
4/22/2015	0.071	8	
4/23/2015	0.029	8.1	
4/27/2015	0.05	8.9	
4/28/2015	0.049	8.8	
4/29/2015	0.049	8.9	
4/30/2015	0.019	8.7	

January 2014 - No Flow
February 2014 - No Flow
April 2014 - No Flow
June 2014 - No Flow
July 2014 - No Flow
October 2014 - No Flow
November 2014 - No Flow
December 2014- No Flow

January 2015 - No Flow
February 2015 - No Flow
March 2015 - No Flow
September 2015 - No Flow
October 2015 - No Flow
November 2015 - No Flow
December 2015 - No Flow

February 2016 - No Flow
April 2016 - No Flow
May 2016 - No Flow

90th percentile pH	8.2
10th percentile pH	7.5
90th percentile temp	24.9
Average Flow	0.058255
Maximum Flow	0.1037

5/4/2015	0.048	8.2
5/5/2015	0.054	8.9
5/6/2015	0.049	8.8
5/7/2015	0.017	8.6
5/19/2015	0.029	8.2
5/20/2015	0.048	8.2
5/21/2015	0.034	8
5/22/2015	0.013	7.9
6/1/2015	0.05	7.9
6/2/2015	0.052	7.9
6/3/2015	0.051	7.9
6/4/2015	0.051	7.8
6/5/2015	0.018	7.7
6/9/2015	0.047	7.9
6/10/2015	0.048	7.8
6/11/2015	0.047	7.8
6/12/2015	0.015	7.6
6/15/2015	0.048	8
6/16/2015	0.048	7.7
6/17/2015	0.053	7.8
6/18/2015	0.02	7.7
6/22/2015	0.057	7.9
6/23/2015	0.06	7.8
6/24/2015	0.056	7.7
6/25/2015	0.055	7.7
6/26/2015	0.021	7.8
7/6/2015	0.056	7.8
7/7/2015	0.055	7.8
7/8/2015	0.058	7.8
7/9/2015	0.059	7.7
7/10/2015	0.019	7.8
7/13/2015	0.058	7.7
7/14/2015	0.061	7.8
7/15/2015	0.068	7.8
7/16/2015	0.073	7.6
7/17/2015	0.021	8.1
7/20/2015	0.065	7.9
7/21/2015	0.061	7.7
7/22/2015	0.06	7.9
7/23/2015	0.02	7.9
7/28/2015	0.061	7.9
7/29/2015	0.046	8.1
7/30/2015	0.003	7.7
8/11/2015	0.061	7.9
8/12/2015	0.064	7.8
8/13/2015	0.069	7.8
8/14/2015	0.025	7.8
8/18/2015	0.055	7.8
8/19/2015	0.058	7.8
8/20/2015	0.087	7.8
8/21/2015	0.01	8
8/25/2015	0.052	8
8/26/2015	0.048	7.7
8/27/2015	0.032	7.7
1/4/2016	0.064	7.4
1/5/2016	0.067	7.4
1/6/2016	0.063	7.7
1/7/2016	0.063	7.6
1/8/2016	0.021	7.8
1/12/2016	0.07	7.8
1/13/16	0.08	7.7
1/14/16	0.073	7.8
1/15/16	0.027	7.6
1/19/16	0.079	7.5
1/20/16	0.026	7.9
3/7/16	0.088	8.8

3/8/16	0.079	9
3/9/16	0.086	8.2
3/10/16	0.075	8.1
3/11/16	0.03	8.4
3/14/16	0.086	8
3/15/16	0.08	7.9
3/16/16	0.083	7.7
3/17/16	0.082	7.6
3/18/16	0.026	7.9
3/21/16	0.091	7.6
3/22/2016	0.081	7.3
3/23/2016	0.081	7.5
3/24/2016	0.085	7.2
3/25/2016	0.025	7.3
3/28/2016	0.081	7.5
3/29/2016	0.077	7.7
3/30/2016	0.085	7.5
3/31/2016	0.026	7.5

Attachment 8

7/6/2016 2:01:58 PM

Facility = St Louis WWTP
Chemical = Total Residual Chlorine
Chronic averaging period = 4
WLAa = 19
WLAc =
Q.L. = 100
# samples/mo. = 30
# samples/wk. = 8

Summary of Statistics:

observations = 1
Expected Value = 200
Variance = 14400
C.V. = 0.6
97th percentile daily values = 486.683
97th percentile 4 day average = 332.758
97th percentile 30 day average= 241.210
< Q.L. = 0
Model used = BPJ Assumptions, type 2 data

A limit is needed based on Acute Toxicity
Maximum Daily Limit = 19
Average Weekly limit = 11.3335966321422
Average Monthly LImit = 9.41680211348591

The data are:

200

7/6/2016 2:00:49 PM

Facility = St Louis WWTP
Chemical = Ammonia as N
Chronic averaging period = 30
WLAa = 5.73
WLAc =
Q.L. = .2
# samples/mo. = 4
# samples/wk. = 1

Summary of Statistics:

observations = 1
Expected Value = 9
Variance = 29.16
C.V. = 0.6
97th percentile daily values = 21.9007
97th percentile 4 day average = 14.9741
97th percentile 30 day average= 10.8544
< Q.L. = 0
Model used = BPJ Assumptions, type 2 data

A limit is needed based on Acute Toxicity
Maximum Daily Limit = 5.73
Average Weekly limit = 5.73
Average Monthly LImit = 3.91774838625377

The data are:

9

Attachment 9

MEMORANDUM

State Water Control Board
2111 North Hamilton Street P. O. Box 11143 Richmond, VA. 23230

SUBJECT: Loudoun County - St. Louis C-510521

TO: Dale Phillips - BWCM

FROM: Gary N. Moore Gary

DATE: August 7,1979

COPIES: Sam Waldo-(BAT), Elaine Mozer-Construction Grants, Neil Peterman(NRO)

The following effluent limits apply to the St. Louis STP if the additional 30-day holding time at design flow is maintained and no effluent is discharged when the flow in Beaverdam Creek falls below 0.086 mgd:

Flow	0.086 mgd
BOD_5+ SS	20mg/l
D.O.	6.8 mg/l
TKN	9 mg/l

I believe that no useful purpose will be served by imposing a TKN limit on this facility, in as much as the manufacturer states that the plant will achieve a TKN of 2.2 mg/l in the summer and 5.8 mg/l in the winter.

I would appreciate anything you could do to expedite the processing of this Step III grant through EPA. I believe the facility should be built as designed and approved by the State Department of Health and the Water Control Board.

sl

Attachment 8

NRO

MEMORANDUM

State Water Control Board

2111 North Hamilton Street | P. O. Box 11143 | Richmond, VA. 23230

SUBJECT: Loudoun County - St. Louis STP C-5/0521

TO: ~~Dale Phillips~~ - BWCM

FROM: Gary Moore - NRO

DATE: August 14, 1979

COPIES: Sam Waldo - BAT, Elaine Mozur - Const. Grants, Neil Peterman - NRO

After adjusting stream velocities & segment lengths, I have established the following effluent limits for St. Louis:

Flow 0.086 MGD
BOD_5 & SS 20 mg/l
TKN 5.0 mg/l
D.O. 6.8 mg/l.

} These limits meet anti-degradation "standards" in Beaverdam Creek.

The following data was input for the Streeter-Phelps (with NOD) model:

Segment 1 (Receiving Stream): Length = 0.5 mi
Velocity = 1 fps
7/10 Flow = 0.0043 mgd

Segment 2 (Beaverdam Creek to Dog Branch) Length = 2.2 mi
Velocity = 1 fps
Flow = 0.086 mgd

Segment 3: (Beaverdam Creek from Segment 2 to confluence with North Fork)
Length = 7 mi.
Velocity = 0.5 fps

Page 2

DALE Phillips - BWRM

STREAM TEMP 30°C

STREAM D.O. = 6.8 mg/l

$K_1 = .18$

$K_N = .1$

$K_2 = 5.0$

BACKGROUND STREAM BOD_5 = 2 mg/l

" " NOD_4 = 2 mg/l

CRITICAL DISCHARGE = 0.007 cfs/sq.mi

The SAME EFFLUENT STANDARDS ARE REQUIRED IF STREAM VELOCITIES OF 0.5 fps ARE USED FOR SEGMENTS 1 & 2 AND 0.25 fps FOR SEGMENT 3.

LOUDOUN COUNTY - St. Louis (Drainage Areas) S.A.A.

Beaverdam Creek Watershed above receiving stream	10.506 sq. mi. 0.0475 MGD
Unnamed tributary of Beaverdam Creek (receiving stream)	0.953 sq. mi. 0.004295 MGD
Beaverdam Creek Watershed below unnamed tributary to Dog Branch	2.396 sq. mi. 0.0167 CFS 0.0108 MGD
Dog Branch Watershed	6.916 sq. mi. 0.0484 CFS 0.0312 MGD
Beaverdam Creek Watershed below Dog Branch to North Fork	1.264 sq. mi. 0.0057 MGD
North Fork Watershed	EST. 0.068 MGD
Potomac River, Section 9, Class III B 10 year/7 day drought flow	0.007 CFS/sq. mi.
(Goose Creek near Leesburg)	1CFS=0.646 MGD

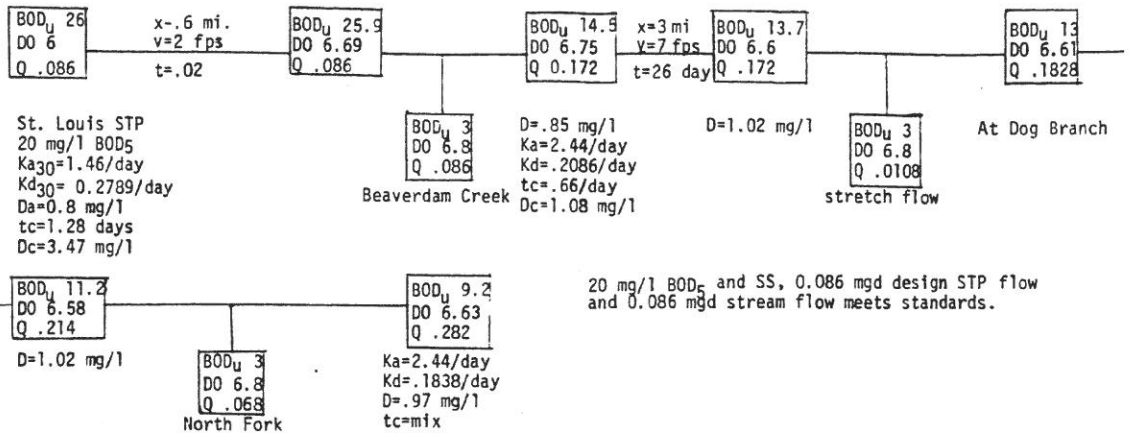
SUBJECT: Louis STP - LOUDOUN COUNTY

TO: File

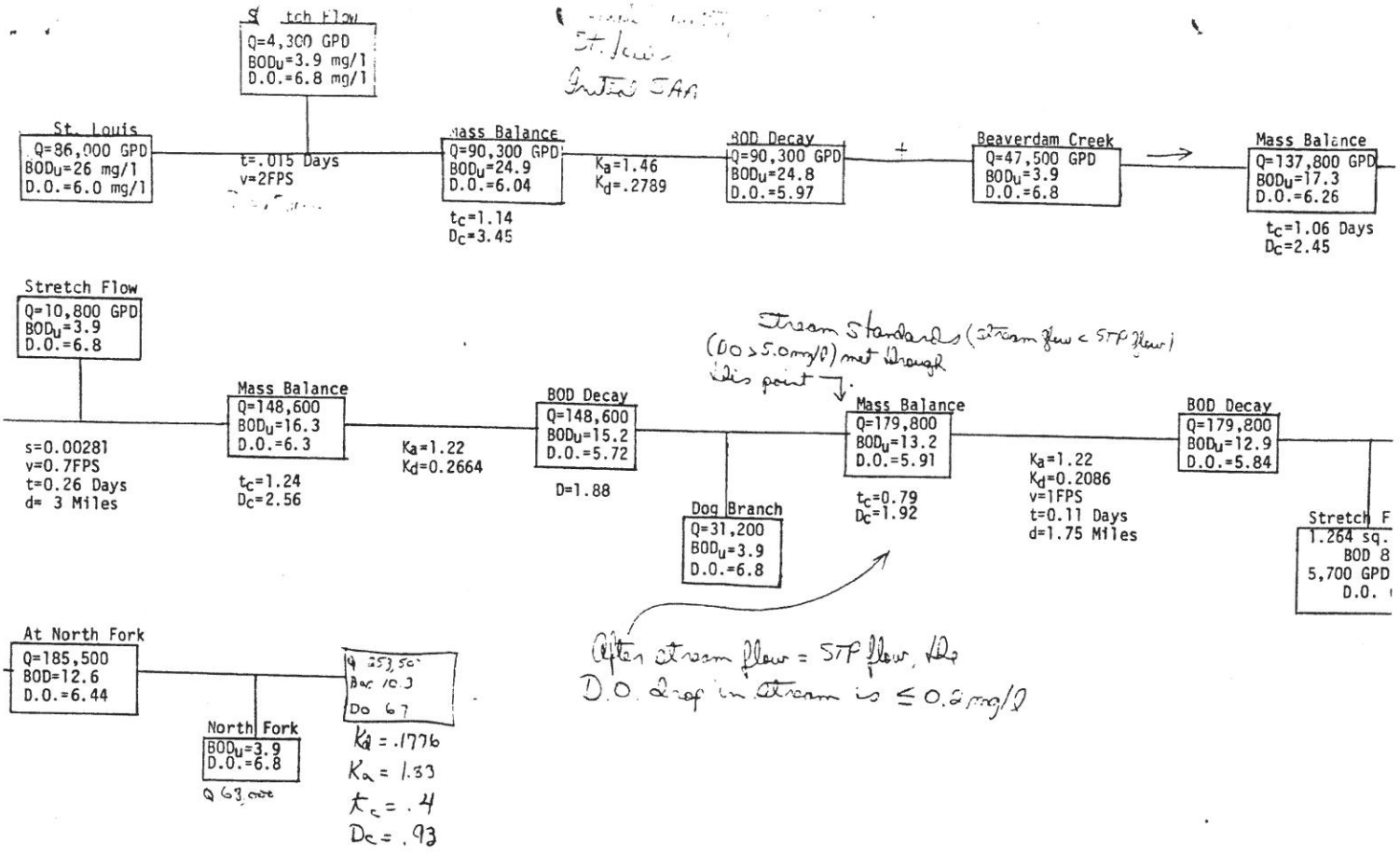
FROM: Gary N. Moore

DATE: October 20, 1978

Stream flow=design flow of STP(0.086 mgd)
Calculations from 11/16/78



20 mg/l BOD$_5$ and SS, 0.086 mgd design STP flow and 0.086 mgd stream flow meets standards.


St. Louis
Q=86,000 GPD
BODu=26 mg/1
D.O.=6.0 mg/1
t=.015 Days
v=2FPS
Mass Balance
Q=90,300 GPD
BODu=24.9
D.O.=6.04
tc=1.14
Dc=3.45
Ka=1.46
Kd=.2789
BOD Decay
Q=90,300 GPD
BODu=24.8
D.O.=5.97
Beaverdam Creek
Q=47,500 GPD
BODu=3.9
D.O.=6.8
Mass Balance
Q=137,800 GPD
BODu=17.3
D.O.=6.26
tc=1.06 Days
Dc=2.45
Stretch Flow
Q=10,800 GPD
BODu=3.9
D.O.=6.8
s=0.00281
v=0.7FPS
t=0.26 Days
d= 3 Miles
Mass Balance
Q=148,600
BODu=16.3
D.O.=6.3
tc=1.24
Dc=2.56
Ka=1.22
Kd=0.2664
BOD Decay
Q=148,600
BODu=15.2
D.O.=5.72
D=1.88
Dog Branch
Q=31,200
BODu=3.9
D.O.=6.8
Mass Balance
Q=179,800
BODu=13.2
D.O.=5.91
tc=0.79
Dc=1.92
Ka=1.22
Kd=0.2086
v=1FPS
t=0.11 Days
d=1.75 Miles
BOD Decay
Q=179,800
BODu=12.9
D.O.=5.84
Stretch F
1.264 sq.
BOD 8
5,700 GPD
D.O.
At North Fork
Q=185,500
BOD=12.6
D.O.=6.44
North Fork
BODu=3.9
D.O.=6.8
Q 63 cfs
Q 253.50
Bod 10.3
Do 6.7
Kd = .1776
Ka = 1.33
tc = .4
Dc = .93
Stream Standards (stream flow < STP flow)
(DO > 5.0 mg/l) met through
this point
After stream flow = STP flow, Dc
D.O. drop in stream is ≤ 0.2 mg/l

Loudoun County - ST. LOUIS (DRAINAGE AREAS) S.A.A.

Sect 9, III B

BEAVERDAM CREEK WATERSHED ABOVE RECEIVING STREAM 10.506 sq

[at .009 cfs/sqmi = .06097

UNNAMED TRIBUTARY OF BEAVERDAM CREEK (RECEIVING STREAM)

WATERSHED 0.959 sq

BEAVERDAM CREEK WATERSHED BELOW UNNAMED TRIBUTARY

Flow From UNNAMED TRIB to 2mi Down FROM POD =] TO DOG BRANCH 2.396 sq

.56 x .0108 = .006 mgd]

,0048 to Dog Br.]

DOG BRANCH WATERSHED 6.416 sq

BEAVERDAM CREEK WATERSHED BELOW DOG BRANCH TO NORTH FORK 1.264 sq.

NORTH FORK WATERSHED

Potomac River, Section 7, Class III B ~~0.009~~

10 YEAR / 7 DAY DROUGHT FLOW - 0.007 CFS/SQ MI

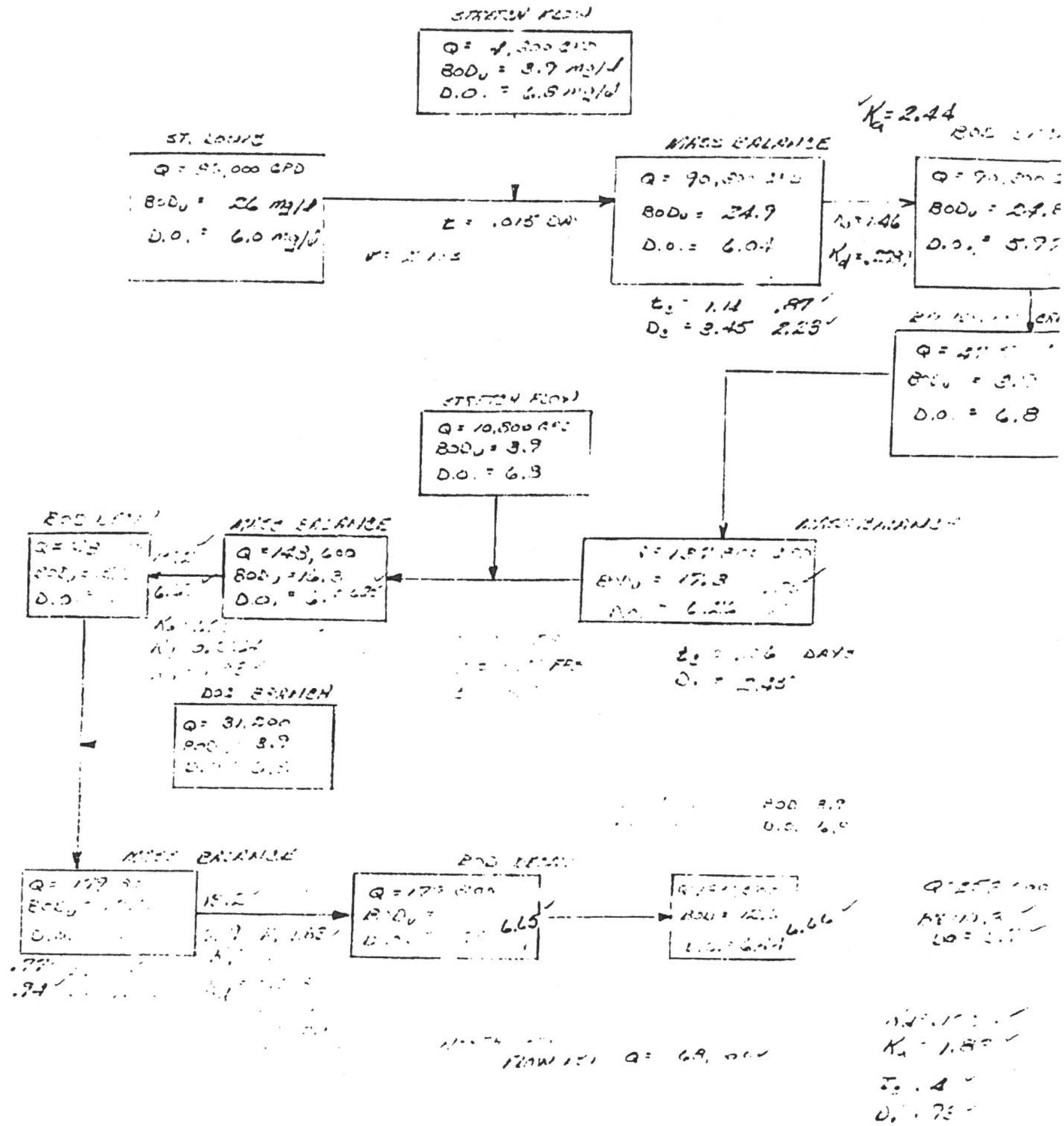
(Goose Creek near Leesburg) 1CFS = 0.646 MGD

.6 2 1 3.1

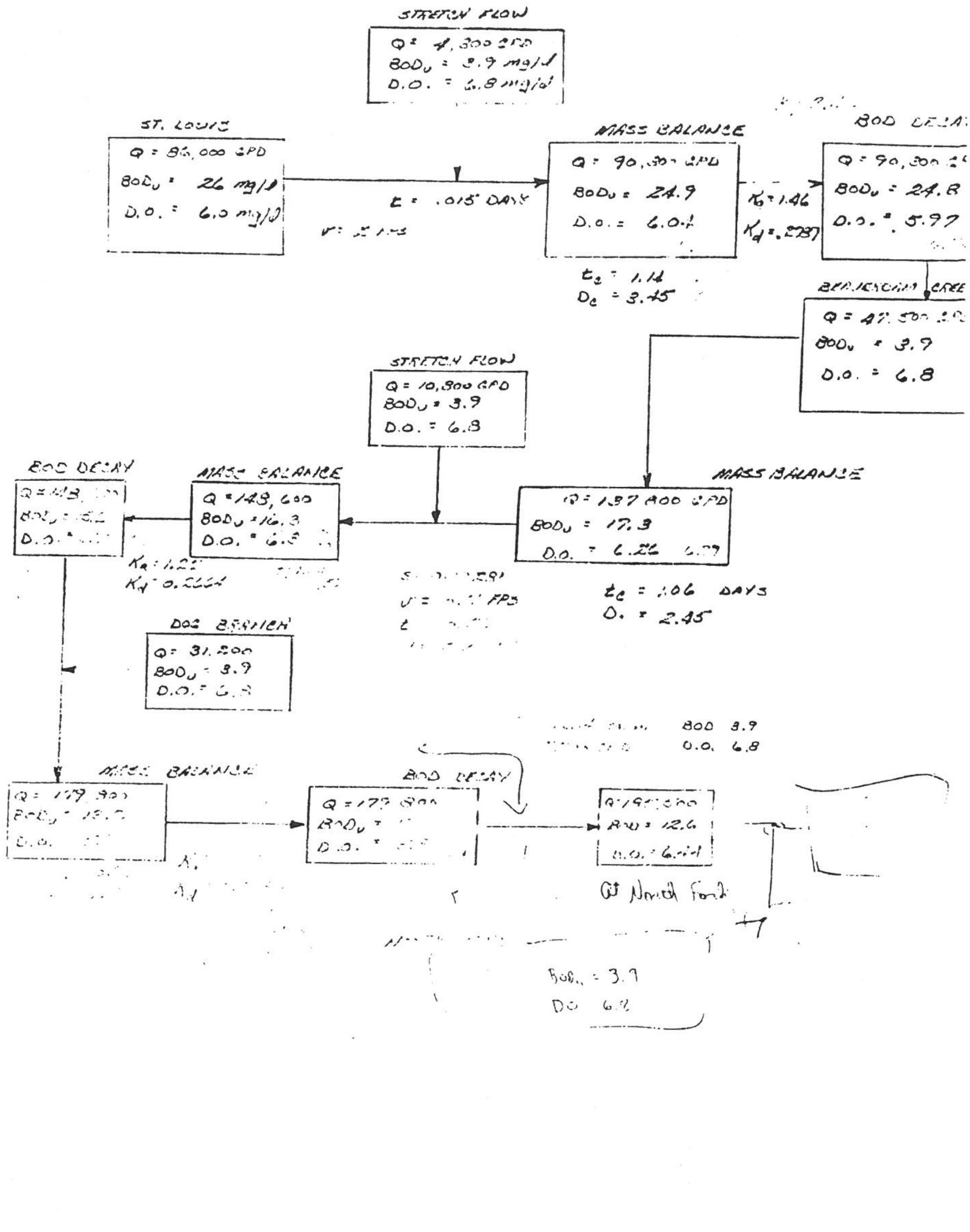
.0108

47 500
10 800
31 200
89,500 to Dog Br.
5 700
68 000
163200

COPY



STREAM FLOW
Q = 4,300 CFD
BODu = 3.7 mg/l
D.O. = 6.8 mg/l
ST. LOUIS
Q = 81,000 CPD
BODu = 26 mg/l
D.O. = 6.0 mg/l
t = .015 DAY
MASS BALANCE
Q = 90,
BODu = 24.7
D.O. = 6.04
Kd = 2.44
t = 1.12 .87
D = 3.45 2.23
BOD
BODu = 24.8
D.O. = 5.97
Q =
BODu = 3.
D.O. = 6.8
STREAM FLOW
Q = 10,500 CFS
BODu = 3.9
D.O. = 6.8
MASS BALANCE
Q = 143,600
BODu = 16.3
BOD LOSS
BODu = 17.3
t = 1.06 DAYS
D = 2.35
BOD
Q = 31,200
BODu 3.9
MASS BALANCE
BOD
Q = 172
BOD 3.9
D.O. 6.9
6.65
6.66
Kd = 1.85
FLOW Q = 68,


STRETCH FLOW
Q = 4,300 GPD
BOD$_u$ = 3.9 mg/l
D.O. = 6.8 mg/l
ST. LOUIS
Q = 86,000 GPD
BOD$_u$ = 26 mg/l
D.O. = 6.0 mg/l
t = .015 DAYS
MASS BALANCE
Q = 90,300 GPD
BOD$_u$ = 24.9
D.O. = 6.04
K_a = 1.46
K_d = .2287
t_c = 1.14
D_c = 3.45
BOD DECAY
BOD$_u$ = 24.8
D.O. = 5.97
D.O. = 6.8
BOD$_u$ = 3.9
STRETCH FLOW
Q = 10,800 GPD
BOD$_u$ = 3.9
D.O. = 6.8
MASS BALANCE
Q = 137,400 GPD
BOD$_u$ = 17.3
t_c = .106 DAYS
D_c = 2.45
MASS BALANCE
Q = 148,600
BOD$_u$ = 16.3
BOD DECAY
DOE BRANCH
BOD$_u$ = 3.9
MASS BALANCE
BOD DECAY
BOD 3.9
D.O. 6.8
BOD = 12.6
At North Fork
Bod$_u$ = 3.9
DO 6.8

STREAM ASSIMILATION ANALYSIS

N in effluent = 10 ÷ 20 mg/l

Stream: _____ Date: _____

Discharge: _____ Topo Sheet: _____

Critical Discharge: _____

Gauging Station: _____

Computation Number	(1)		1.	
Drainage Area				
Stream temperature	30	30	30	30
Saturation D.O.				
D.O. Discharge				
K_1 (carbonacious).....				
K_n (nitrogenous)				
K_2 (reaeration)				
Flow, mgd (discharge)				
BOD_5 (discharge)				
NOD_u (discharge				
Flow, mgd (stream).....				
BOD_5 (stream)				
NOD_u (stream)				
Length of segment (mi)				
Velocity of stream (fps) ...				
D.O. (allowable)				
D.O. (stream)				
D.O. from allowable ..... (Red indicates violation)				
Flow (combined).....				
BOD_5 decay @ t				
NOD_u decay @ t				
time, days				
D.O. @ t ("A" indicates ... Critical D.O.)				

Note: At the end of each segment, if critical D.O. has not been reached, the next stream segment should be analyzed. The parameter values determined @ time = t become the new "stream" data and new flows introduced to the stream (eg: tributaries, STP discharges, stretch flows) become the new "discharge" data. [K_1, K_n and K_2 must be adjusted as necessary]

mgd = (.646)cfs

Reviewer:

STREAM ASSIMILATION ANALYSIS

Stream: _____ Date: _____

Discharge: _____ Topo Sheet: _____

Critical Discharge: _____

Gauging Station: _____

Computation Number				
Drainage Area				
Stream temperature	30	30	30	30
Saturation D.O.	7.6	7.4	7.6	7.6
D.O. Discharge	6.8	6.8	6.8	6.8
K_1 (carbonacious).....	.11	.18	.18	.18
K_n (nitrogenous)	.1	.1	.1	.1
K_2 (reaeration)	5	5	5	5
Flow, mgd (discharge)	.046	.046	.033	.068
BOD_5 (discharge)	20	2	2	2
NOD_u (discharge	20	2	2	2
Flow, mgd (stream).....	.047	.093	.176	.2072
BOD_5 (stream)	2	19	6.3	5.6
NOD_u (stream)	2	31	20	16.6
Length of segment (mi)	2	2	.175	1
Velocity of stream (fps) ...	2	2	1	1
D.O. (allowable)	5	6.6	6.6	6.6
D.O. (stream)	7.6	7.4	6.73	6.61
\ D.O. from allowable	.6	.1321	.006	.07
(Red indicates violation)				
Flow (combined).....	.093	.176	.2072	.2752
BOD_5 decay @	19	6.3	5.6	3.7
NOD_u decay @ t	31	20	16.1	13
time, days	.052	.091	.1054	.09
D.O. @ t ("A" indicates ...	7.4	6.73	6.61	6.7
Critical D.O.)				

Note: At the end of each segment, if critical D.O. has not been reached, the next stream segment should be analyzed. The parameter values determined @ time = t become the new "stream" data and new flows introduced to the stream (eg: tributaries, STP discharges, stretch flows) become the new "discharge" data. [K_1, K_n and K_2 must be adjusted as necessary]

Prepared by: _____

STREAM ASSIMILATION ANALYSIS

Stream: [illegible] Cr.

Discharge: [illegible] TKN=9, V=2.1

Date: 7/10/79

Topo Sheet: [illegible]

Critical Discharge:

Gauging Station:

Computation Number	[illegible]	[illegible]	[illegible]	
Drainage Area		[illegible]		
Stream temperature	30	30	30	
Saturation D.O.	7.4	7.4	7.4	
D.O. Discharge	6.8	6.6	6.?	
K_1 (carbonacious)..........	.18	.17	.18	
K_n (nitrogenous)	.1	.1	.1	
K_2 (reaeration)	5	5	[illegible]	
Flow, mgd (discharge)	.016	.080	.0310	
BOD_5 (discharge)	20	[illegible]	2	
NOD_u (discharge	40	[illegible]	2	
Flow, mgd (stream)..........	.0003	.0903	.1763	
BOD_5 (stream)	2	10	7	
NOD_u (stream)	[illegible]	32	20	
Length of segment (mi)	.5	[illegible]	7	
Velocity of stream (fps) ...	[illegible]	2	1	
D.O. (allowable)	[illegible]	6.6	6.6	
D.O. (stream)	[illegible]	7.4	6.81	
% D.O. from allowable ...... (Red indicates violation)	2.4	.20	-.05	
Flow (combined)............	.0903	.1763	.2075	
BOD_5 decay @	10	8.3	5	
NOD_u decay @ t	32	20	15.6	
time, days	.0[illegible]	.0622	.39[illegible]	
D.O. @ t ("A" indicates ... Critical D.O.)	7.4	6.81	[illegible] A	

Note: At the end of each segment, if critical D.O. has not been reached, the next stream segment should be analyzed. The parameter values determined @ time = t become the new "stream" data and new flow data due to the stream (eg: tributaries, STP discharges, stretch flows) become the new "discharge" data. (K_1, K_n and K_2 must be adjusted as necessary.)

mgd = (.646 cfs

[illegible]r: ____________

(B) · [illegible]

STREAM ASSIMILATION ANALYSIS

Stream: [illegible] Creek

Date: [illegible]

Discharge: [illegible]

Topo Sheet: ______
Critical Discharge: ______
Gauging Station: ______

Computation Number	[illegible]	[illegible] B.Dam	[illegible]	[illegible] B.Dam	[illegible]
Drainage Area					
Stream temperature	30	30	30	30	30
Saturation D.O.	7.4	7.4	7.4	7.4	7.4
D.O. Discharge	6.8	6.8	6.8	6.8	6.8
K_1 (carbonacious)	.19	.18	.19	.19	.19
K_n (nitrogenous)	.1	.1	.1	.1	.1
K_2 (reaeration)	5	5	5	5	5
Flow, mgd (discharge)	.086	.086	.086	.086	.0712
BOD_5 (discharge)	20	2	20	2	2
NOD_u (discharge	40	[illegible]	26	2	2
Flow, mgd (stream)	.0043	.0903	.0043	.0903	.1763
BOD_5 (stream)	2	19	2	19	8.2
NOD_u (stream)	2	38	2	21	11
Length of segment (mi)	.5	2.2	.5	2.2	7
Velocity of stream (fps)	1	1	1	1	.5
D.O. (allowable)	5	6.6	5	6.6	6.6
D.O. (stream)	6.7	6.57	6.8	[illegible]	6.61
Δ D.O. from allowable (Red indicates violation)	1.57	-.18	1.65	.01	.06
Flow (combined)	.0903	.1763	.0903	.1763	.2075
BOD_5 decay @	19	8.2	19	8.2	5.6
NOD_u decay @ t	38	97	21	11	8.5
time, days	.0305	.1304	.0305	.1304	.0416
D.O. @ t ("A" indicates Critical D.O.)	6.57	6.42	6.65	6.61	6.66 A

Violation ↑ | TN = 5, NOD = 22 | OK ↑ Crit. point

Note: At the end of each segment, if critical D.O. has not been reached, the next stream segment should be analyzed. The parameter values determined @ time = t become the new "stream" data and new flows introduced to the stream (eg: tributaries, STP discharges, stretch flows) become the new "discharge" data. [K1, Kn and K2 must be adjusted as necessary]

[illegible] Date: ______

(C)

STREAM ASSIMILATION ANALYSIS

Stream: Longhorn Creek Date: 8/[illegible]

Discharge: Flow [illegible] Topo Sheet:

Critical Discharge:

Gauging Station:

Computation Number					
Drainage Area					
Stream temperature	30	30	30	30	30
Saturation D.O.	7.4	7.4	7.4	7.4	7.4
D.O. Discharge	6.1	6.1	6.8	6.8	6.1
K_1 (carbonacious).....	.17	.17	.17	.17	.17
K_n (nitrogenous)	.1	.1	.1	.1	.1
K_2 (reaeration)	5	5	5	5	5
Flow, mgd (discharge)	.086	.086	.086	.086	.0312
BOD_5 (discharge)	20	2	20	2	2
NOD_u (discharge	22	2	22	2	2
Flow, mgd (stream).....	.0312	.0007	.0013	.0007	.0013
BOD_5 (stream)	2	10	2	10	10
NOD_u (stream)	2	21	2	21	2
Length of segment (mi)	.5	.26	.5	2.2	.5
Velocity of stream (fps) ...	.5	.5	.5	.5	.5
D.O. (allowable)	5	6.4	5	6.4	6.4
D.O. (stream)	6.8	6.37	6.8	6.57	6.37
\ D.O. from allowable	1.37	-.3	1.52	-.03	.037
(Red indicates violation)					
Flow (combined).....	.0907	.176	.0907	.1063	.2063
BOD_5 decay @	10	7.0	10	7.9	5.4
NOD_u decay @ t	21	10	21	11	9.5
time, days	.26	.26	.06	.26	.32
D.O. @ t ("A" indicates ...	6.37	6.5	6.52	6.57	6.52
Critical D.O.)					

Note: At the end of each segment, if critical D.O. has not been reached, the next stream segment should be analyzed. The parameter values determined @ time = t become the new "stream" data and new flows introduced to the stream (eg: tributaries, STP discharges, stretch flows) become the new "discharge" data. [k], K_1 and K_2 must be adjusted as necessary!

[illegible] = (.046)cfs

[illegible]:

(1)

STREAM ASSIMILATION ANALYSIS

Stream: _____ Date: _____

Discharge: _____ Topo Sheet: _____

Critical Discharge: _____

Gauging Station: _____

	1	2		
Computation Number	STP D.O.		Sam's (1)	
Drainage Area				
Stream temperature	30	30	30	
Saturation D.O.		7.4	7.4	
D.O. Discharge		6.8	6.6	
K_1 (carbonacious).....		.18	.17	
K_n (nitrogenous)		.18	.17	
K_2 (reaeration)		5		
Flow, mgd (discharge)		.085		
BOD_5 (discharge)				
NOD_u (discharge 25.1	3			
Flow, mgd (stream).....		.0903	.0903	
BOD_5 (stream)		19	19	
NOD_u (stream)		0	0	
Length of segment (mi)		3	3	
Velocity of stream (fps) ...		2	2	
D.O. (allowable)		7.2	6.6	
D.O. (stream)		7.4	7.4	
Δ D.O. from allowable		-.16	.44	
(Red indicates violation)				
Flow (combined).....	.0903	.176	.176	
BOD_5 decay @ t		8.3	8.3	
NOD_u decay @ t			0	
time, days			.09	
D.O. @ t ("A" indicates ... Critical D.O.)			7.0	

Note: At the end of each segment, if critical D.O. has not been reached, the next stream segment should be analyzed. The parameter values determined @ time = t become the new "stream" data and new flows introduced to the stream (eg: tributaries, STP discharges, stretch flows) become the new "discharge" data. [K_1, K_n and K_2 must be adjusted as necessary]

Qmd = (.0486 cfs

(5)

STREAM ASSIMILATION ANALYSIS

Assume of TKN of 5mg/l = 22 ubOD

Stream: _____ Date: _____

Discharge: _____ Topo. Sheet: _____

Critical Discharge: _____

Gauging Station: _____

Computation Number				
Drainage Area				
Stream temperature	30	30	30	30
Saturation D.O.	7.6	7.4	7.6	7.4
D.O. Discharge	6.7	6.8	6.8	6.7
K_1 (carbonacious).....	.17	.18	.18	.17
K_n (nitrogenous)		1	1	
K_2 (reaeration)	5	5	5	5
Flow, mgd (discharge)	.086	.0583	.0312	.068
BOD_5 (discharge)	2	2	2	2
NOD_u (discharge	2	2	2	2
Flow, mgd (stream).....	.0083	.0917	.1496	.1798
BOD_5 (stream)	2	12	9	5.2
NOD_u (stream)		3	13	9.2
Length of segment (mi)	.5	1	1.75	1
Velocity of stream (fps) ...	2	2	1	1
D.O. (allowable)	5	6.6	6.8	6.8
D.O. (stream)	6.7	7.4	6.8	6.74
Δ D.O. from allowable	2.6	.24	.14	.186
(Redindicates violation)				
Flow (combined).....	.0917	.1496	.1798	.2287
BOD_5 decay @ t	10	12	5.8	7.4
NOD_u decay @ t	11	13	10.8	7.7
time, days	.25		.159	.25
D.O. @ t ("A" indicates ... Critical D.O.)	7.1	7.4	6.84	6.75

6.5 ppm

Note: At the end of each segment, if critical D.O. has not been reached, the next stream segment should be analyzed. The parameter values determined @ time = t become the new "stream" data and new flows introduced to the stream (eg: tributaries, STP discharges, stretch flows) become the new "discharge" data. [K_1, K_n and K_2 must be adjusted as necessary]

mgd = (.646)cfs

Reviewer: _____

3.@

STREAM ASSIMILATION ANALYSIS

Stream: _____ Date: _____

Discharge: _____ Topo Sheet: _____

Critical Discharge: _____

Gauging Station: _____

N=50 N=50

Computation Number	1	2	With Tox.	Mix w/ B. Can
Drainage Area				
Stream temperature	30	30	30	30
Saturation D.O.	7.4	7.4	7.4	7.4
D.O. Discharge	6.8	6.8	6.8	6.8
K_1 (carbonacious).....	.18	.18	.18	.18
K_n (nitrogenous)	.1	.1	.1	.1
K_2 (reaeration)	5	5	5	5
Flow, mgd (discharge)	.086	.086	.086	.086
BOD_5 (discharge)	20	2	20	2
NOD_u (discharge	50	2	50	2
Flow, mgd (stream).....	.0817	.0903	0817	.0903
BOD_5 (stream)	2	19	2	19
NOD_u (stream)	2	24	2	47.5
Length of segment (mi)	.5	3	.5	3
Velocity of stream (fps) ...	2	2	2	2
D.O. (allowable)	5	6.6	5	6.6
D.O. (stream)	6.8	7.4	6.8	7.4
Δ D.O. from allowable	1.8	+.8	2.4	.06
(Red indicates violation)				
Flow (combined).....	.1703	.1753	.0903	.176
BOD_5 decay @ t	19	2	12	8.3
NOD_u decay @ t	22	5	7.5	24.7
time, days	.0150	.0152	.0152	.0916
D.O. @ t ("A" indicates ... Critical D.O.)	6.8	6.8	7.4	6.56

OK.

Rains Roden

Note: At the end of each segment, if critical D.O. has not been reached, the next stream segment should be analyzed. The parameter values determined @ time = t become the new "stream" data and new flows introduced to the stream (eg: tributaries, STP discharges, stretch flows) become the new "discharge" data. [K_1, K_n and K_2 must be adjusted as necessary]

mgd = (.646)cfs

Reviewer: _____

J W

STREAM ASSIMILATION ANALYSIS

Stream: _____ Date: _____

Discharge: _____ Topo. Sheet: _____

Critical Discharge: _____

Gauging Station: _____

Computation Number	Orig. Info	Calc. Info		
Drainage Area				
Stream temperature	30			
Saturation D.O.	[illegible]			
D.O. Discharge	6.8			
K_1 (carbonacious).....	.19			
K_n (nitrogenous)	.1			
K_2 (reaeration)	5			
Flow, mgd (discharge)	.0312			
BOD_5 (discharge)	2			
NOD_u (discharge	2			
Flow, mgd (stream).....	.176			
BOD_5 (stream)	8.3			
NOD_u (stream)	24.7			
Length of segment (mi)	1.75			
Velocity of stream (fps) ...	1			
D.O. (allowable)	[illegible]			
D.O. (stream)	[illegible]			
Δ D.O. from allowable	-0.1			
(Red indicates violation)				
Flow (combined).....	0.2012			
BOD_5 decay @ t	5.6			
NOD_u decay @ t	22.7			
time, days	.1069			
D.O. @ t ("A" indicates Critical D.O.) ...	5.5			

Width

Note: At the end of each segment, if critical D.O. has not been reached, the next stream segment should be analyzed. The parameter values determined @ time = t become the new "stream" data and new flows introduced to the stream (eg: tributaries, STP discharges, stretch flows) become the new "discharge" data. [K_1, K_n and K_2 must be adjusted as necessary]

mgd = (.646)cfs

Reviewer: _____

St. Louis

STREAM ASSIMILATION ANALYSIS

Stream: 7/20 Stream Flow Date: 7/20

Discharge: Topo. Sheet:

Critical Discharge:

Gauging Station:

Computation Number	Upstream Stn.	Above Dog Br.	Add Dog Br.	
Drainage Area				
Stream temperature	30	30	30	
Saturation D.O.	7.4	7.4	7.4	
D.O. Discharge	6.8	6.8	6.8	
K_1 (carbonacious).....	.18	.18	.18	
K_n (nitrogenous)	.1	.1	.1	
K_2 (reaeration)	5	5	5	
Flow, mgd (discharge)	.0120	.0583	.0312	
BOD_5 (discharge)	20	2	2	
NOD_u (discharge	50	2	2	
Flow, mgd (stream).....	.0043	.0903	.1486	
BOD_5 (stream)	2	19	9	
NOD_u (stream)	3	27.5	29	
Length of segment (mi)	.5	3	1.75	
Velocity of stream (fps) ...	2	2	1	
D.O. (allowable)	[illegible]	[illegible]	6.6	
D.O. (stream)	7.2	7.4	6.6	
Δ D.O. from allowable	2.4	0	-.18	
(Red indicates violation)				
Flow (combined).....	.0903	.1486	.1798	
BOD_5 decay @ t	[illegible]	9	7.9	
NOD_u decay @ t	[illegible]	29	24	
time, days	[illegible]	.0916	.1063	
D.O. @ t ("A" indicates ... Critical D.O.)	[illegible]	6.6	6.42	

Note: At the end of each segment, if critical D.O. has not been reached, the next stream segment should be analyzed. The parameter values determined @ time = t become the new "stream" data and new flows introduced to the stream (eg: tributaries, STP discharges, stretch flows) become the new "discharge" data. [K1, K_n and K_2 must be adjusted as necessary]

mgd = (.646)cfs

Reviewer:

VA0062187

Subj: Loudoun County - St. Louis STP / C-510521
To: Dale Phillips - BWCM
From: Gary N. Moore - NRO
Date: July 30, 1979

I have completed the latest modelf for St. Louis and come up with these results:

7/10

Assuming a stream flow, and no additional holding time at the STP, an effluent of 20 mg/l BOD_5, & 5 mg/l TKN and 6.8 mg/l D.O. will meet anti-degradation standards.

I also believe that an effluent of 30 mg/l BOD_5, ≈ 12 mg/l TKN & 6.8 mg/l D.O. will meet standards if the present additional 30 day holding at design flow is maintained & no decrease to the stream is made when stream flow falls below 0.086 mgd. Please verify this & let me know.

Attachment 10

Date	Well Number	Hardness (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	Chloride (mg/L)	Nitrate (mg/L)	Nitrite (mg/L)	COD (mg/L)	Spec Cond (umhos/cm)	TDS (mg/L)	E. coli (mpn/cmL)	TOC (mg/L)	pH (s.u.)	Temp (deg C)	Iron (mg/L)	
9/23/2015	1	Well	was	dry												
4/1/2015	1	84.8	41.6	ND	27.8	0.12	ND		211	173	<1	1.7	6.02		5.68	No COD results
8/21/2014	1	Well	was	dry												
3/19/2014	1	99	45.2	ND	36.3	0.72	ND	26	255	180	<1		6.2	8.6		No TOC results
9/18/2013	1	Well	was	dry												
3/27/2013	1	Well	was	dry												
9/26/2012	1	Well	was	dry												
3/28/2012	1	Well	was	dry												
9/14/2011	1	Well	was	dry												
3/16/2011	1	71	32	ND	27	ND	ND	ND	270	160	<2	1	5.4	12.2		Fecal coliform
9/28/2010	1	Well	was	dry												
9/16/2009	1	Well	was	dry												
3/18/2009	1	Well	was	dry												
9/3/2008	1	Well	was	dry												
3/24/2008	1	150	30	ND	79	0.13	ND	71	450	270		5.2	6	11.4		No Bacteria results found in file
9/27/2007	1	Well	was	dry												
3/21/2007	1	88	38	ND	27	2	ND	ND	240	140	<1	ND	5.4	14.6		
9/23/2015	2	198	68.3	ND	106	0.67	0.032	-1.02	508	401	<1	ND	6.23	15.7	13.9	
4/1/2015	2	162	60.8	ND	57.2	0.52	ND		220	270	<1	ND	6.4		17.9	
8/21/2014	2	244	71	ND	111	0.46	ND	ND	521	488	2	1.1	5.9	18.6		
3/19/2014	2	178	73.5	ND	88	0.53	ND	ND	396	322	<1		6.3	12.6		No TOC results
9/18/2013	2	229		ND	122	0.69	ND	ND	517	396	<1	5.5	6.3	14.4		Alkalinity inadvertently omitted
3/27/2013	2	190	100	ND	84	0.5	ND	ND	440	370	<1	1.1	6.1			No Temperature results
9/26/2012	2	240	76	<0.2	120	0.65	<0.02	25	630	420	3.1	1.5	6.2			No Temperature results
3/28/2012	2	200	74	ND	110	0.69	ND	ND	570	410	<1	0.89	7.1			No Temperature results
9/14/2011	2	240	72	ND	140	0.75	ND	ND	590	470	<1	0.94	5.9			No Temperature results
3/16/2011	2	190	68	ND	97	ND	ND	ND	540	350	<2	1.3	6	13.1		Fecal coliform
9/28/2010	2	160	65	ND	110	0.58	ND	ND	640	550	<2	1.4	6	14.3		
9/16/2009	2	520	64	0.24	150	1.1	0.005	ND	660	780	<2	ND	6.1	14.7		
3/18/2009	2	210	57	0.5	280	0.93	ND	ND	530	360	<2	1.1	6.1			
9/3/2008	2	220	66	0.2	110	0.75		ND	530	450	<2	ND	6.3	14.8		Nitrite not included on COA
3/24/2008	2	240	64	ND	83	0.53	ND	13	490	290		ND	6	13.3		No Bacteria results found in file
9/27/2007	2	240	64	ND	110	0.95	ND	ND	540	420	<1	ND	6.5			
3/21/2007	2	200	67	ND	66	0.8	ND	ND	420	310	<1	ND	5.8	13.8		
9/23/2015	3	166	117	ND	237	0.15	0.038	4.92	908	495	1	49.1	6.12	15.8	14.9	
4/1/2015	3	161	125	ND	179	0.15	ND		802	463	<1	1.9	6.47		28.8	No COD results
8/21/2014	3	151	127	ND	182	ND	0.065	ND	832	447	2	1.6	6.1	18.6		
3/19/2014	3	118	119	ND	159	0.12	ND	26	670	386	<1		6.4	12.3		No TOC results
9/18/2013	3	129		ND	172	0.077	0.038	38	724	429	<1	7.4	6.5	14.6		Alkalinity inadvertently omitted
3/27/2013	3	180	100	ND	140	0.073	0.014	ND	820	450	<1	1.6	6.3			No Temperature results
9/26/2012	3	130	130	<0.2	180	0.07	0.02	42	870	440	<1	2.4	6.3			No Temperature results
3/28/2012	3	140	110	0.13	190	ND	ND	ND	940	480	<1	1.9	6.3			No Temperature results
9/14/2011	3	160	110	ND	210	ND	ND	ND	970	560	<1	1.8	6			No Temperature results
3/16/2011	3	140	100	ND	210	ND	ND	ND	890	430	<2	2.1	6.1	12.5		Fecal coliform
9/28/2010	3	170	120	ND	160	ND	ND	27	940	420	500	2.1	6.3	14.8		
9/16/2009	3	400	120	ND	250	ND	ND	ND	1100	460	4	1.6	6.2	14.7		
3/18/2009	3	200	110	ND	270	0.04	ND	ND	1100	610	<2	1.7	6.1			
9/3/2008	3	230	110	0.2	260	ND		ND	1300	790	2	ND	6.3	14.9		Nitrite not included on COA
3/24/2008	3	340	120	ND	310	ND	ND	11	1300	670		1.5	6.1	12.6		No Bacteria results found in file
9/27/2007	3	240	110	ND	290	ND	ND	16	1200	690	<1	2.1	6.3			
3/21/2007	3	170	58	ND	200	ND	ND	ND	810	460	1.3	ND	5.5	13.3		
9/23/2015	4	219	112	ND	151	0.53	ND	2.41	657	456	34.5	1.4	6.08	16.1	3.3	
4/1/2015	4	73	42.7	ND	39	1.3	ND		236	186	<1	1.4	6.47		0.94	No COD results
8/21/2014	4	207	84.6	ND	142	0.25	ND	ND	634	512	35.9	1.2	5.9	17.1		

3/19/2014	4	75	40	ND	60	0.81	ND	ND	285	199	<1		6	8.8		No TOC results
9/18/2013	4	183		ND	154	0.096	ND	ND	620	423	6.3	5.9	6.1	14.3		Alkalinity inadvertently omitted
3/27/2013	4	190	80	ND	60	0.092	ND	ND	300	210	<1	1	5.7			No Temperature results
9/26/2012	4	250	96	<0.2	170	0.05	<0.02	25	830	550	<1	2	6.1			No Temperature results
3/28/2012	4	130	110	ND	160	ND	ND	ND	380	430	<1	0.94	5.9			No Temperature results
9/14/2011	4	230	82	ND	170	ND	ND	ND	790	640	2	1	5.9			No Temperature results
3/16/2011	4	54	20	ND	43	ND	ND	ND	270	260	<2	1.3	5.4	11.3		Fecal coliform
9/28/2010	4	280	88	ND	170	ND	ND	ND	900	670	<2	1.4	6.2	15.2		
9/16/2009	4	590	83	ND	190	ND	ND	ND	850	690	<2	0.8	6.1	14.6		
3/18/2009	4	250	88	ND	65	0.05	ND	ND	730	480	<2	1.9	6.2			
9/3/2008	4	290	100	ND	170	ND		ND	810	630	<2	ND	6.3	14.7		Nitrite not included on COA
3/24/2008	4	290	86	ND	180	ND	ND	29	820	430		1.9	6.2	11.7		No Bacteria results found in file
9/27/2007	4	340	110	ND	170	ND	ND	ND	810	640	14	2.5	6.3			
3/21/2007	4	64	14	ND	12	0.23	ND	ND	130	78	<1	ND	5.2	12.7		
9/23/2015	5	165	111	ND	219	1.9	ND	1.05	945	531	2	1.4	6.14	16	1.8	
4/1/2015	5	140	87.4	ND	192	1.2	ND		783	485	<1	3.1	6.4		1.35	No COD results
8/21/2014	5	162	136	0.15	177	0.88	0.05	ND	781	500	6.3	1.7	6.4	18		
3/19/2014	5	124	104	ND	162	0.75	ND	ND	714	415	<1		6.5	9.9		No TOC results
9/18/2013	5	123		0.11	149	0.84	ND	ND	701	403	<1	6	6.5	14.7		Alkalinity inadvertently omitted
3/27/2013	5	180	100	ND	150	0.64	0.013	ND	700	410	<1	1.6	6.4			No Temperature results
9/26/2012	5	140	150	<0.2	190	0.84	<0.02	53	960	460	<1	2.5	6.4			No Temperature results
3/28/2012	5	120	54	0.26	100	ND	ND	ND	530	300	<1	1.9	6.6			No Temperature results
9/14/2011	5	140	140	ND	180	ND	ND	ND	890	440	<1	1.8	6.2			No Temperature results
3/16/2011	5	150	110	ND	ND	ND	ND	ND	1000	510	<2	1.8	6.3	13.3		Fecal coliform
9/28/2010	5	170	140	ND	140	0.18	ND	ND	950	440	8	2.4	6.5	15.2		
9/16/2009	5	160	140	ND	210	0.46	ND	ND	1100	650	<2	2.1	6.4	15.2		
3/18/2009	5	150	110	0.3	220	0.43	ND	ND	1000	500	<2	2.3	6.1			
9/3/2008	5	210	130	ND	240	0.28		ND	1200	680	30	1.8	6.5	15.2		Nitrite not included on COA
3/24/2008	5	230	100	ND	320	0.06	ND	39	1300	670		2.7	6.4	12.5		No Bacteria results found in file
9/27/2007	5	260	120	ND	290	0.24	ND	ND	1300	670	3	3.3	6.4			
3/21/2007	5	200	110	ND	290	0.19	ND	ND	1100	590	2	1.1	6.1	14.2		
9/23/2015	6	198	137	0.19	243	0.034	ND	12.2	1074	573	14.5	2.5	6.25	16.6	9.01	
4/1/2015	6	132	69.5	ND	177	0.034	ND		745	443	<1	5.1	6.55		20.4	No COD results
8/21/2014	6	170	138	0.16	184	0.05	0.05	ND	907	549	>2419.6	3.4	6.4	20		
3/19/2014	6	105	104	ND	162	ND	ND	29	667	375	<1		6.6	7.5		No TOC results
9/18/2013	6	113		0.11	149	ND	ND	ND	700	413	<1	8.8	6.7	16.9		Alkalinity inadvertently omitted
3/27/2013	6	190	100	ND	340	ND	ND	ND	620	350	5.1	4.4	6.5			No Temperature results
9/26/2012	6	150	170	<0.2	200	<0.02	<0.02	36	1000	490	90.6	4.9	6.5			No Temperature results
3/28/2012	6	120	110	0.6	180	ND	ND	14	850	430	12.2	3.7	6.7			No Temperature results
9/14/2011	6	140	120	ND	180	ND	ND	ND	1200	640	24.9	3.7	6			No Temperature results
3/16/2011	6	100	98	ND	200	ND	ND	ND	920	430	<2	4.5	6.4	8.4		Fecal coliform
9/28/2010	6	170	100	ND	400	ND	ND	20	1600	800	>1600	7.9	6.5	18.8		
9/16/2009	6	120	120	ND	260	ND	ND	ND	1100	570	80	3.1	6.5	17.8		
3/18/2009	6	150	100	ND	240	ND	ND	ND	1100	510	<2	4	6.6			
9/3/2008	6	180	100	ND	250	ND		ND	1200	650	2	2.6	6.5	17.6		Nitrite not included on COA
3/24/2008	6	200	52	ND	410	ND	ND	36	1400	720		4.6	6.4	10.3		No Bacteria results found in file
9/27/2007	6	200	110	ND	290	ND	ND	16	1200	640	61	3.6	6.3			
3/21/2007	6	170	68	ND	250	ND	ND	20	990	540	33	5	6.2	11.9		

Attachment 11

Public Notice – Environmental Permit

PURPOSE OF NOTICE: To seek public comment on a draft permit from the Department of Environmental Quality that will allow the release of treated wastewater into a water body in Loudoun County, Virginia.

PUBLIC COMMENT PERIOD: XXX, 2016 to XXX, 2016

PERMIT NAME: Virginia Pollutant Discharge Elimination System Permit – Wastewater issued by DEQ, under the authority of the State Water Control Board

APPLICANT NAME, ADDRESS AND PERMIT NUMBER: Loudoun County Sanitation Authority dba Loudoun Water, PO Box 4000, Ashburn, VA 20146, VA0062189

NAME AND ADDRESS OF FACILITY: St Louis WWTP, 22151 Newlin Mill Rd, Middleburg, VA 20117

PROJECT DESCRIPTION: Loudoun Water has applied for a reissuance of a permit for the public St Louis WWTP. The applicant proposes to release treated sewage wastewaters from residential areas at a rate of 0.086 million gallons per day into a water body. The facility proposes to release the treated sewage wastewaters in the unnamed tributary to Beaverdam Creek in Loudoun County in the Potomac River watershed. A watershed is the land area drained by a river and its incoming streams. The permit will limit the following pollutants to amounts that protect water quality: pH, BOD, Total Suspended Solids, Total Residual Chlorine, *E. coli,* Ammonia as N, and Dissolved Oxygen. The facility shall monitor without limitation the following parameters: Total Nitrogen, Total Kjeldahl Nitrogen, Nitrate+Nitrite, Total Phosphorus, Flow, Influent BOD and Influent TSS.

HOW TO COMMENT AND/OR REQUEST A PUBLIC HEARING: DEQ accepts comments and requests for public hearing by hand-delivery, e-mail or postal mail. All comments and requests must be in writing and be received by DEQ during the comment period. Submittals must include the names, mailing addresses and telephone numbers of the commenter/requester and of all persons represented by the commenter/requester. A request for public hearing must also include: 1) The reason why a public hearing is requested. 2) A brief, informal statement regarding the nature and extent of the interest of the requester or of those represented by the requester, including how and to what extent such interest would be directly and adversely affected by the permit. 3) Specific references, where possible, to terms and conditions of the permit with suggested revisions. A public hearing may be held, including another comment period, if public response is significant, based on individual requests for a public hearing, and there are substantial, disputed issues relevant to the permit.

CONTACT FOR PUBLIC COMMENTS, DOCUMENT REQUESTS AND ADDITIONAL INFORMATION: The public may review the draft permit and application at the DEQ-Northern Regional Office by appointment, or may request electronic copies of the draft permit and fact sheet.
Name: Alison Thompson
Address: DEQ-Northern Regional Office, 13901 Crown Court, Woodbridge, VA 22193
Phone: (703) 583-3834 E-mail: Alison.Thompson@deq.virginia.gov